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THE COUPLE’S ADVANTAGE: A CASE STUDY OF WHEN TO START  
COLLECTING SOCIAL SECURITY

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THE COUPLE'S ADVANTAGE: A CASE STUDY OF WHEN TO START  
COLLECTING SOCIAL SECURITY

A  
PROJECT

Presented to the Faculty  
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## Abstract

*Deciding when to collect social security benefits is a difficult decision, but particularly so for couples. Without being able to analyze the full spectrum of options, couples could be missing out on potential income. In addition, many of these couples are stuck trying to figure out what to do if there is only one earner in the household. This paper focuses on the difference between a single earner and that earner with a spouse that is not otherwise qualified to collect. It delivers real world solutions by using sensitivity analysis for the interest rates, age at death, and gender. Additional analyses focused on the particular life expectancies predicted on the social security web site. Thus, rather than matrices of strategies for different combinations of ages at death, it is possible to identify the best strategies and the NPV differences for the “average” case. This paper explains the strategies and outcomes for calculating the couple’s advantage over the individual earner as well as an in-depth analysis of benefits for a class of couples. The case results in a \$136,559 to \$384,989 increase in retirement income for couples over singles. This large increase in annual income can single handedly be attributed to both spousal and survivor benefits that couples receive but singles do not. Due to the complexity and many details of the couple’s rules, this analysis is presented as a solution to the case rather than as a set of possible case options.*

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## **Chapter 1 Introduction**

Many retirees today are forced to decide on the best option for collecting social security benefits for themselves and their spouses without a full analysis of the many possibilities for collecting. The Social Security Administration's (SSA) web site provides retirees with enormous amounts of information regarding their benefits but the material is at times hard to understand and can be confusing. When calculating benefits, the age at death is a key factor in deciding when to collect. According to SSA, a person born in 1952 has a life expectancy of 84 if male and 86 if female.

For our purposes, the earner will be defined as the person who is working and the spouse will be defined as the other person who does not have sufficient social security credits to qualify on their own for benefits. To simplify a very complex problem, the couple is assumed to be of the same age. Because the spouse cannot earn benefits on their own, they must wait until the earner elects to register for retirement benefits before being able to collect spousal benefits (however, the earner can postpone receiving benefits of their own). Just as with the earner, any benefits collected by the spouse before full retirement age (FRA) of 66 will be reduced due to the earlier starting age. The spouse may receive no more than half of the earner's primary insurance amount (PIA) (Fahlund, 2010). Spousal benefits are additional income that single individuals do not get.



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Another couple's benefit is a survivor's benefit that can be as large and in a few cases larger than the earner's maximum benefit. The survivor's benefits depend on the spouse's age at the time of the earner's death and the benefits the earner was (or could have been) receiving (Social Security Timing, 2014). Calculation of survivor's benefits can be very confusing and difficult. We will attempt to make understanding it much easier.

Our calculations are first split into four different collection strategies based on the ages of collection for the couple: 62-62, 62-66, 66-66, and 70-66. Where 62-66 means that the earner begins collecting at age 62 and the spouse begins collecting spousal at age 66. These four cases were selected because they represent the three different milestones in social security: 62 (early retirement), 66 (full retirement), and 70 (late retirement) (Sindell, 2012). They were also selected because there is no benefit to the spouse ever waiting past age 66 to collect either spousal or survivor benefits. However, if the earner waits to age 70 to collect benefits, they will receive up to 132% of their PIA, which will also increase the amount of survivor benefits available to the surviving spouse.

A matrix of net present value (NPV) was constructed for each collection strategy and from there a "Best Strategy" matrix was constructed for 0%, 3%, and 6% interest rates. As the interest rates get larger, early collection (62-62) becomes the better option. To compare couples to singles, another matrix was constructed that showed the maximum values for all the cases compared to the maximum

value for a single if the individual started at age 62, 66, or 70. These matrices were also constructed for interest rates of 0%, 3%, and 6%.

This case is both a practical and real world problem; it covers topics important to many couples who are in the midst of deciding how social security benefits fit in with their future income. The case includes sensitivity analysis for the interest rates, age at death, and gender (Docking, Fortin, & Michelson, 2011), all important pieces that go into considering a best case scenario for a couple with one earner.

## **1.1 Literature Review**

The first social security taxes were collected in January 1937 and the first monthly benefits started in January 1940. Since then, there have been many publications written analyzing many different aspects of social security. The Social Security website, SSA.gov, is by far the most in-depth resource and offers many research papers produced by the SSA. However, SSA lacks in providing concrete examples and information that is easy to apply.

In preparation for this case, the ABE/FEA 2012 program included a paper by Eschenbach and Lewis (2012) that discussed a student case study for when to collect social security. The paper is a great resource but only touches lightly on the details for couples. The work by Reichenstein and Meyer (2011) is a very in-depth resource that explains SSA rules clearly and thoroughly by providing many

examples. They have done extensive research on couples but have never discussed a case for a couple with a single earner. Their many case studies on couples illuminate how to navigate through the SSA system and point out necessary considerations when conducting research on couples with a single earner. Unfortunately, Reichenstein and Meyer limit their analysis to an interest rate of 0%.

Lemons (2012) focused on finding a break-even age, where the accumulated benefit from two retirement options is the same. He used similar analysis techniques expressed in this paper, but did not describe a scenario for a single income couple. Muksian (2004) also used break-even analysis to conclude that collecting early should be avoided. He also used social security software to help calculate AIME from hand entered wage limits. However, he did not speak about single earning couples and did not include various interest rates.

Fahlund (2010) describes five claiming strategies for couples that relate to the claiming strategies we outline in our case but she used the example of a couple where both have earnings and gives no detail about a single earning couple or interest rates. Munnell and Soto (2007) focus on the claiming strategies of women who are married. Their research provided many good points of interest on the topic of spouse and survivor's benefits. It also aided us in our discussions on singles.

The most helpful study by far was Shuart, Weaver, and Whitman (2010),

which took in consideration the time value of money and real interest rates. Their article was structured at finding the optimal claiming strategies for widows approaching retirement and was the only article that alluded to using similar techniques without fully disclosing their calculation methods. Their focus on widows also assisted in further understanding and applying the rules that are specific to widow(er)'s.

The resources for this paper were virtually endless with the many routes that could be taken while navigating social security. Many papers and articles shared various points of interest and similar methods but none took in account varying interest rates, time value of money, and single earning couples. This combination of topics opens up an enormous opportunity for a group of retirees that have, up until now, been ignored.

Interest in this subject was ignited by previous research conducted by Eschenbach and Lewis (2012); Newnan, Eschenbach, and Lavelle (2012); and Docking, Fortin, and Michelson (2011).

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## **Chapter 2 Determining Benefits**

### **2.1 Earner's Retirement Benefits**

When determining the earner's benefit many different factors come into play such as how long the earner had been working, their wage earnings, and the average wage level in the U.S. These factors combine to create a calculated value called the Average Indexed Monthly Earnings (AIME). The AIME takes 35 years of the highest earnings where the earnings before age 60 are indexed to reflect increases in the U.S. workers' average wage level. AIME is used to calculate the Primary Insurance Amount (PIA). The PIA is calculated by using "bend points" – which are determined by SSA using Cost-of-Living Adjustments (COLAs) – and decreasing percentages (90%, 32%, and 15%) to ensure that lower income individuals will benefit from a higher fraction of their earnings. The PIA is the monthly social security benefit at FRA and can be reduced by as much as 25% if collected before FRA or increased by as much as 32% if collected after FRA.

For this case, we used the maximum AIME for 2014 of \$8,890. This value was used to simulate an earner who had maximum-taxable earnings for the 35 years that SSA uses to calculate AIME. For 2014, the 1st bend point is 90% of \$816, the 2nd bend point is 32% of the incremental AIME up to \$4,917, and the 3rd bend point is 15% of the incremental AIME above that point. Note that these bend points are indexed to inflation and for each individual fixed at when the

earner turns 62. Our earner's PIA is therefore calculated as:

$$PIA = (0.90)(816) + (0.32)(4917 - 816) + (0.15)(8890 - 4917) = \$2,643 \quad (1)$$

Based on a maximum monthly PIA of \$2,643, our earner can expect to receive an annual benefit of \$23,784 at age 62, \$31,712 at age 66, and \$41,860 at age 70. Because of SSA's Earning Limit, an earner can receive a reduction of \$1 for every \$2 earned if he/she is earning more than \$15,480 (in 2014) for years before FRA (Social Security Administration, 2014). The earner can expect to see a reduction of \$1 for every \$3 earned above \$41,400 (in 2014) for the year attaining FRA, for the months prior to such attainment. This makes starting at age 62 an especially good option if the earner is no longer earning money. These benefit values are increased annually for the cost of living, so they are constant-value dollars and real (inflation-adjusted) interest rates should be used.

## 2.2 Spousal Benefit

Spousal benefits are benefits the spouse receives based on the earner's record. Spousal benefits are only available when the earner is alive and has registered for benefits. For each of our four cases, it is assumed that the earner did not register for benefits prior to age 62, 66, or 70, depending on the case. For example, in our 66-66 case the earner registered at age 66 so therefore the spouse

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did not collect spousal benefits until age 66. The spouse is eligible to receive a maximum of 50% of the earners PIA, but the spousal benefit can be reduced by as much as 30% if the spouse decides to collect before FRA.

For our case, the annual spousal benefit for a spouse is \$11,099 ( $= 0.5 \times 0.7 \times \text{Earner PIA}$ ) at age 62 and \$15,856 ( $= 0.5 \times \text{Earner PIA}$ ) at age 66. This is annual income that is in addition to the earner's benefits, and that a single individual cannot receive.

### **2.3 Survivor's Benefit**

Survivor's benefits are benefits that a spouse collects based on the earner's record after the earner has died. The most difficult part in calculating the survivor's benefits is when the earner begins benefits before FRA (Meyer & Reichenstein, 2011). The decision of when to start social security benefits is an important decision since it could entail using the Widow(er)'s Limit (Weaver, 2001). The Widow(er)'s Limit was created to help level out the financial burden of losing a spouse who had begun benefits before FRA, which could potentially leave the widow(er) with very little to live on due to the reduced benefits of starting early. In the event that the deceased started collecting benefits before FRA, the survivor's benefit is based on the minimum of two values: 1) 100% of the earner's PIA reduced by the survivor's benefit fraction if the survivor is collecting before FRA, as shown in Table 2.1, or 2) the maximum of a) the amount that was

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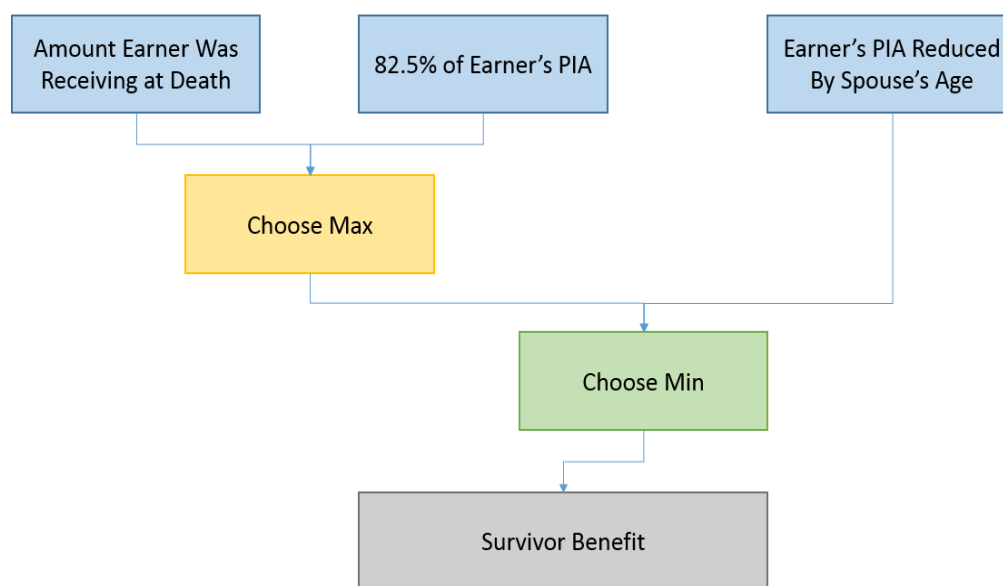
going to the deceased or b) 82.5% of the deceased PIA (Blankenship, 2013). This can be seen as a flow chart in Figure 2.1.

Table 2.1: Survivor Benefit Fraction of the Deceased PIA

| Age | % Benefit | Age | % Benefit | Age | % Benefit |
|-----|-----------|-----|-----------|-----|-----------|
| 60  | 71.5      | 63  | 85.75     | 65  | 95.25     |
| 61  | 76.25     | 64  | 90.5      | 66  | 100       |
| 62  | 81.0      |     |           |     |           |

As seen in Table 2.1, depending on when the survivor begins collecting benefits, their benefit can be reduced by as much as 38.5%. Also, the survivor is able to collect early at age 60 should the earner die before reaching age 62 (Peterson, 2012). FRA for widow(er)'s can be different depending on the year of birth and can be found on the SSA website; for this case the widow(er)'s FRA is age 66.





**Figure 2.1:** Flow chart for calculating survivor's benefits

If the survivor waits until age 66 they could collect 100% of the earner's benefit (Munnell & Soto, 2007). For our calculations we assume that the survivor begins collecting benefits as soon as the earner dies. Calculating survivor's benefits becomes much easier if the earner began collecting at or after FRA. In this case, the survivor's benefit is simply the earner's benefit at death reduced by any penalties due to the survivor being younger than FRA. If the earner dies before getting a chance to collect benefits, the survivor's benefit will be the benefit amount that the deceased would have collected if alive (reduced if the survivor begins benefits before FRA).

Survivor benefits are extremely important to the quality of life of the surviving spouse. As a maximum, the survivor could receive up to 132% of the earner's PIA.

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### **Chapter 3 Net Present Values of Benefits for Couples with a Single Earner**

There are many different strategies for collecting social security benefits for couples that are not an option for singles. An individual simply has to decide on when to start collecting so as to retain maximum lifetime benefits. A couple's decisions will directly affect each other's benefits and impacts the total lifetime benefits in the process. Couples and singles have to pay attention to their projected age at death. The SSA website provides a life expectancy calculator that is based on the year of birth and gender. For our case (both are alive at 62), a person born in 1952 will have a life expectancy of 84 if male and 86 if female. There are other factors to consider such as family health, family longevity history, and personal health history. The ages retrieved from the SSA website are to be used as a rough guideline to assist in deciding how to allot social security benefits.

For a single person, waiting to collect until a later age allows for a higher benefit later on but for a couple, waiting to collect until a later age allows for not only a higher earner benefit, but a higher spousal and survivor benefit (Sun, 2009). This is why age at death is the single most important factor to consider when deciding which strategy is best.

To understand the differences in couples' collecting strategies, matrices were calculated at 0%, 3%, and 6% for each strategy (62-62, 62-66, 66-66, and 70-66). These matrices can be found in Appendix A. The matrices were calculated with

the following assumptions:

1. The spouse will collect survivor's benefits at the death of the earner,
2. The 2014 maximum AIME calculated by the SSA website was used to calculate the PIA for both the couple and the single
3. The couple is of the same age, and
4. The birthday for each couple and single is 12/31/1953 and death is 12/31/"Age<sub>death</sub>".

The calculation in each cell of each matrix was calculated by using the Excel PV equation (Equation 2) and is the sum of the NPV of the earner's retirement benefits (Equation 3), the spousal benefit (Equation 4), and the survivor's benefits (Equation 5). So that all NPV's are in age 62 values, Equations 3 and 4 are divided by  $(1 + i)^{4 \text{ or } 8}$  (Newnan, Eschenbach, & Lavelle, 2012) if that benefit starts at age 66 or 70 respectively. Equation 5 is divided by  $(1 + i)^N$ , where  $N$  is the number of years between the earner's death and 62.

$$NPV = -PV(i, N, pmt) \quad (2)$$

$$NPV_{\text{earner}} = -PV(i, (Earner_{\text{death}} - Earner_{\text{start}}), Earner \text{ Benefit}) \quad (3)$$

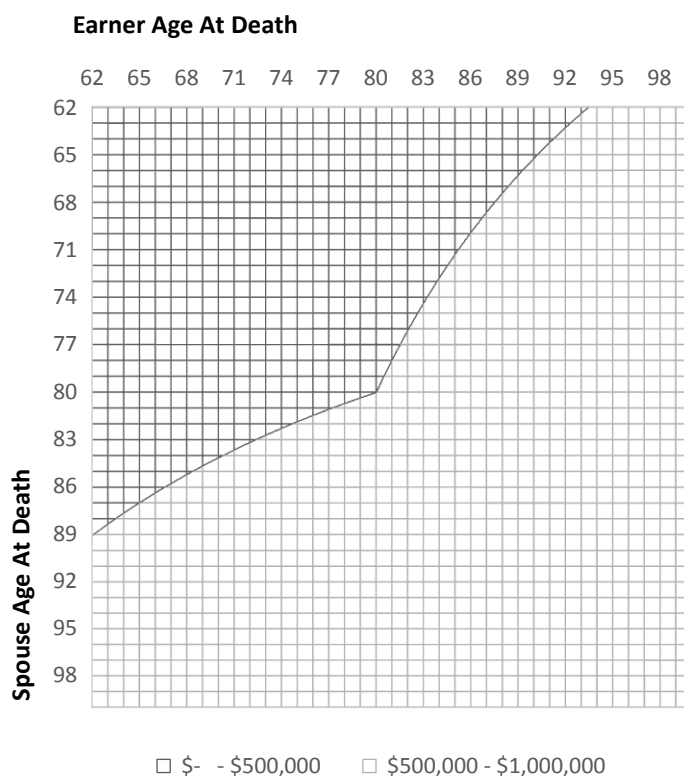
$$NPV_{spouse} = -PV \left( i, \left( \begin{array}{c} MIN(Earner_{death}, Spouse_{death}) \\ - (Spouse_{start} - 1) \end{array} \right), Spousal Benefit \right) \quad (4)$$

$$NPV_{survivor} = IF \left( Earner_{death} < Spouse_{death}, -PV \left( i, \left( \begin{array}{c} Spouse_{death} \\ - Earner_{death} \end{array} \right), Survivor Benefit \right), 0 \right) \quad (5)$$

In equation 3, the spouse's start age is subtracted by one year in order to account for the fact that benefits began at the end of the previous year. Equation 5 uses an IF/THEN statement since the age of the earner and spouse at death depends on whether or not the spouse will receive benefits. If the spouse dies before the earner then no survivor benefits will be earned.

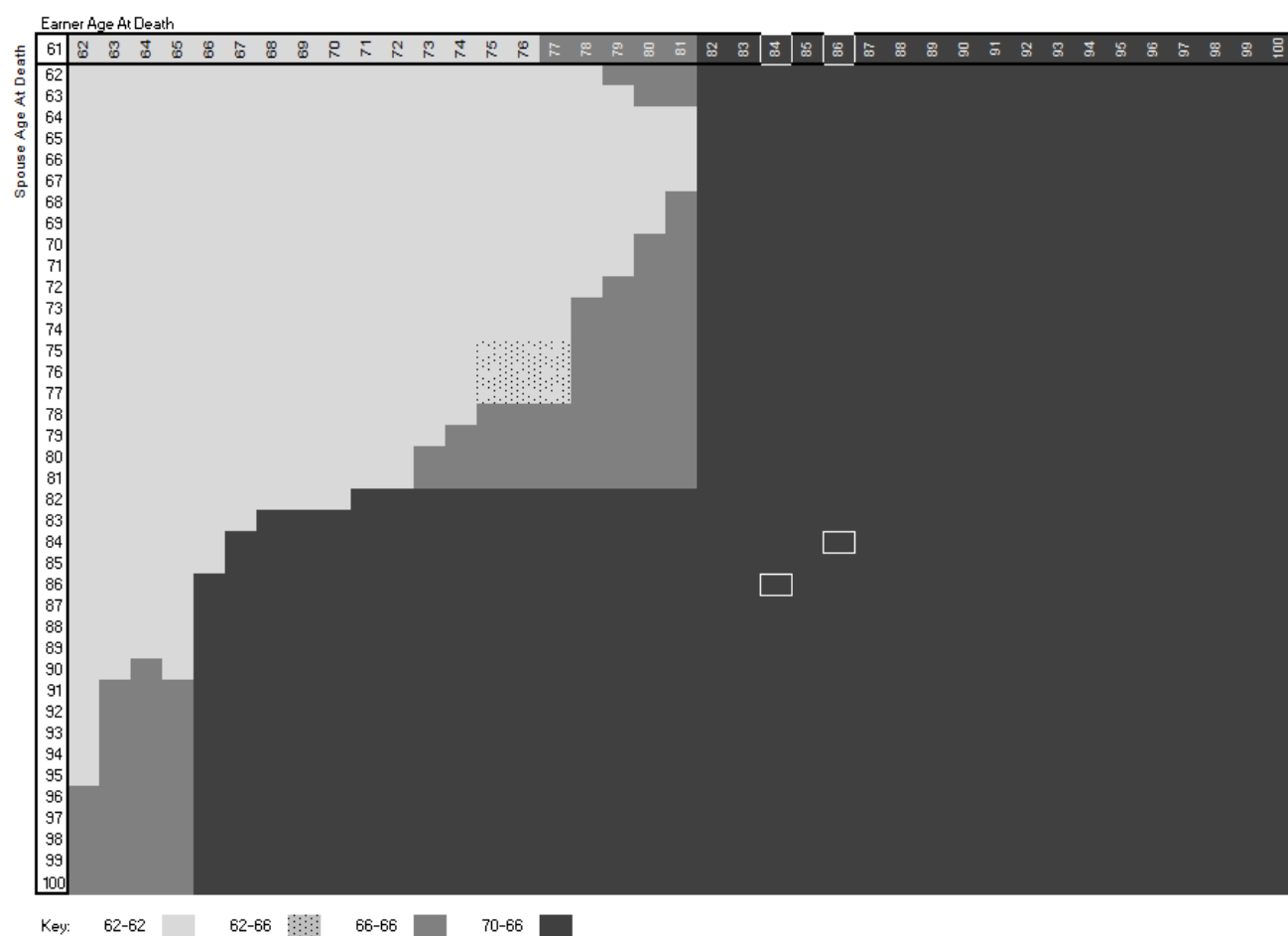
A graph was constructed to show the combined NPV of the earner and the spouse. An example of this type of graph can be seen in Figure 3.1, and other similar figures can be seen in Appendix B. The graph can be used to understand that, for example, if a male earner dies at 84 and the female spouse dies at 86 then the couple can expect to see an NPV of \$598,979 for a 3% interest rate. This total includes \$391,099 for the earner's benefit, \$182,513 from spousal benefits, and \$25,365 from survivor benefits.

## NPV of Couple's Total Benefits @ 3% (62-62)

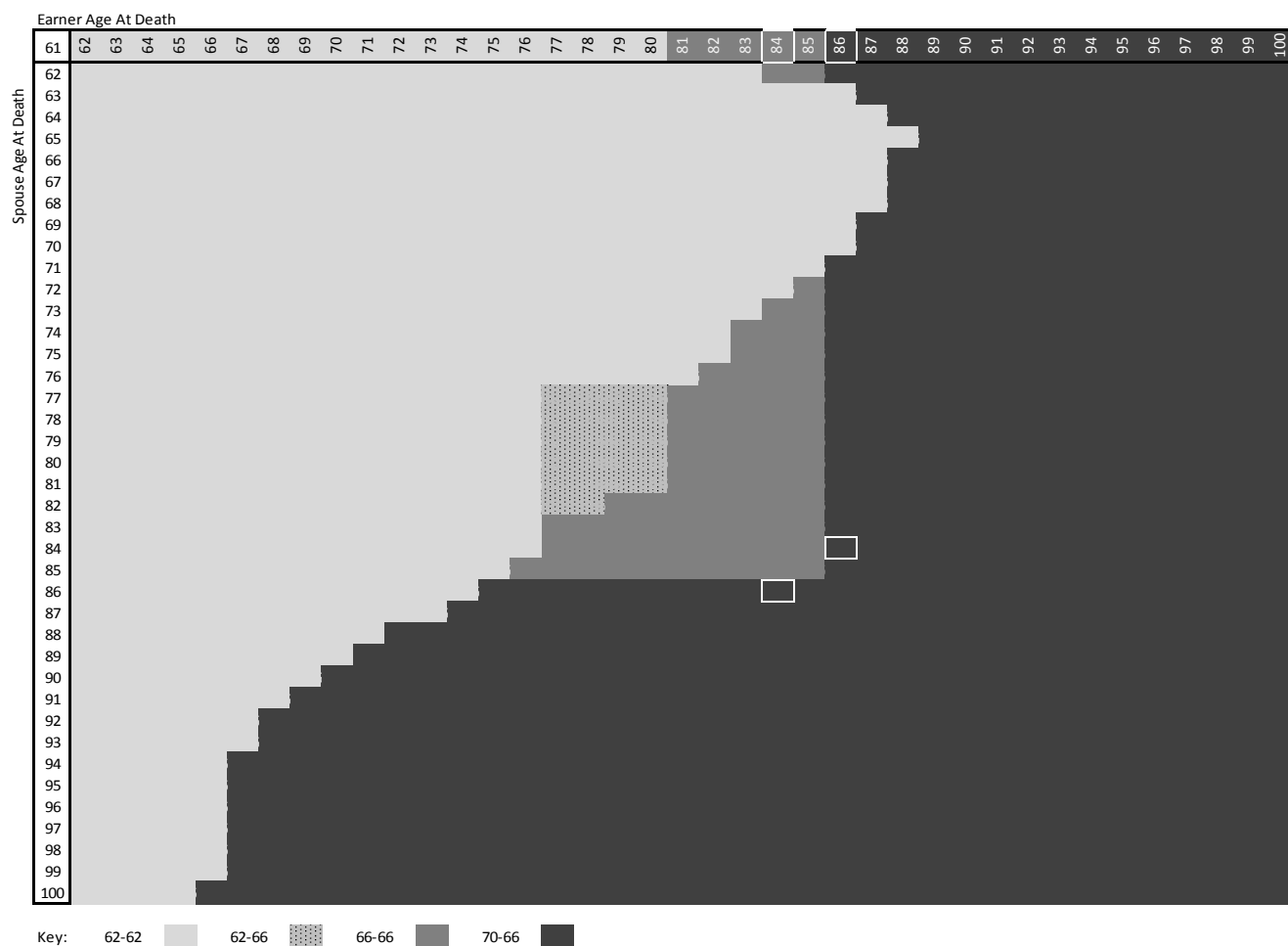


**Figure 3.1:** NPV of couple's total benefits based on age with a 3% interest rate for case 62-62

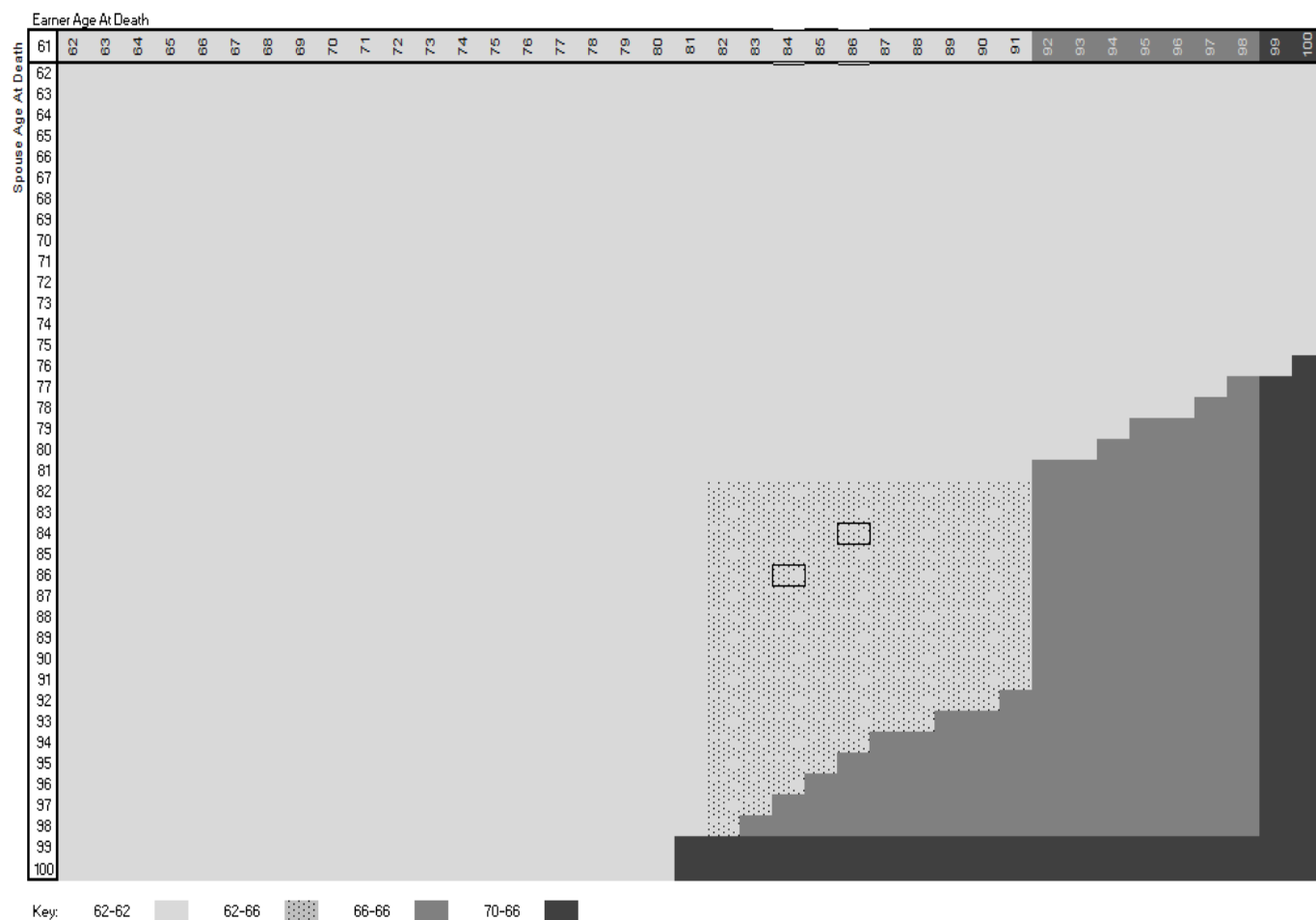
In order to depict the “best strategy” for a couple, a matrix was constructed to compare and display the best case. The best strategy matrices can be seen in Figures 3.2-3.4. The top row on each matrix shows how the single earner's best strategy compares to the couple's. The single earner's best strategy seems to follow the same horizontal pattern as the couple's and only deviates in the vertical direction due to the addition of spousal and survivor's benefits. The best strategy for couples and singles, of course depends on how long they live and the interest rate.



**Figure 3.2:** The best strategy for a couple at 0% interest. The best strategy for a single is shown along the top horizontal row.



**Figure 3.3:** The best strategy for a couple at 3% interest. The best strategy for a single is shown along the top horizontal row.



**Figure 3.4:** The best strategy for a couple at 6% interest. The best strategy for a single is shown along the top horizontal row.

Tables 3.1 and 3.2 compare the NPV of a female and male earning couple to a female and male earning single. The tables make this comparison by using interest rate, the age benefits began (62, 66, and 70), and life expectancies (female age 86 and male age 84). For example, in Table 2 a male earning couple who starts benefits at age 62 at 3% interest will have an NPV of \$598,979 when he dies at 84 and his female spouse dies at 86, when compared to a single male who dies at 84 with an NPV of \$391,100.

At 3% interest it seems beneficial for a couple to wait until at least age 66 to



begin collecting benefits since waiting until age 70 will not add any significant benefits. For a single earner it seems like starting at age 66 is a good option. It is interesting to see that as the interest rate gets higher, the better starting at age 62 looks for both singles and couples. However, the opposite is true for lower interest rates which seem to highlight the benefits of waiting until age 70.

**Table 3.1:** NPV of a male earner at life expectancies and different starting ages and interest rates

Male Earner

|           |    | Interest  |         |         |         |         |         |
|-----------|----|-----------|---------|---------|---------|---------|---------|
|           |    | 0%        | 3%      | 6%      | 0%      | 3%      | 6%      |
| Start Age | 62 | 854,649   | 598,979 | 441,744 | 547,039 | 391,100 | 292,627 |
|           | 66 | 967,228   | 636,129 | 435,646 | 602,536 | 403,588 | 280,283 |
|           | 70 | 1,012,894 | 636,868 | 415,313 | 627,906 | 394,489 | 255,080 |

Key: Male Earning Couple ☐ Male Earning Single ☐

**Table 3.2:** NPV of a female earner at life expectancies and different starting ages and interest rates

Female Earner

|           |    | Interest  |         |         |         |         |         |
|-----------|----|-----------|---------|---------|---------|---------|---------|
|           |    | 0%        | 3%      | 6%      | 0%      | 3%      | 6%      |
| Start Age | 62 | 849,892   | 596,673 | 440,603 | 594,608 | 414,160 | 304,043 |
|           | 66 | 967,228   | 636,129 | 435,646 | 665,960 | 434,335 | 295,504 |
|           | 70 | 1,012,894 | 636,868 | 415,313 | 711,626 | 435,074 | 275,172 |

Key: Female Earning Couple ☐ Female Earning Single ☐

## Chapter 4 The Couple's Advantage

In order to compute the couple's advantage, the NPV of an individual is computed, in the same way that NPV is calculated for a couple at starting ages of 62, 66, and 70. A matrix was then constructed calculating the difference between the couple's maximum NPV (out of all strategies) and the single's maximum NPV (out of all start ages); a portion of this matrix can be seen in Figure 4.1. The resulting matrix shows the couple's annual advantage over a single person. The matrix shows that there is a strong advantage to being married but also shows that at cell 84/62, the NPV's are equal. This is due to the fact that in these cells there is no couple's advantage since the spouse has not collected spousal benefits that would contribute to the couple's annual NPV. The spouse has not collected spousal benefits in these cells because the maximum couple's NPV for these cells are the cases that do not allow for a spouse to collect until age 66(i.e. 66-66 and 70-66). Because of this, the couple's NPV resembles that of the single's NPV.

Figures 4.2 and 4.3 compare the NPV between a couple and a single person at the projected age at death for each sex (female age 86 and male age 84). For example, the male earner has an NPV of approximately \$1,000,000 at 0%, this number reflects the NPV for a male earner at age 84 and a female spouse at age 86. The longer life expectancy for the female earner does not make a large difference to the couple's overall NPV due to the fact that the spouse is still dying +/- 2 years from the earner. The couple's advantage is greater when a male is the earner due

to the earlier death which produces lower annual earnings for the single male.

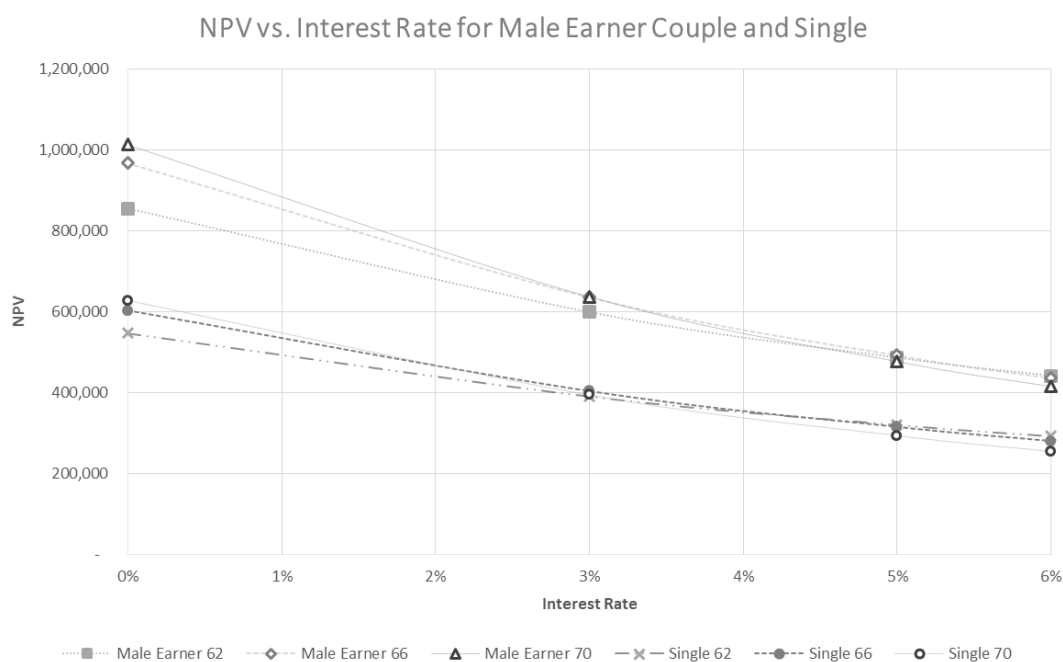
Although this analysis was conducted using 2014 max AIME and life expectancies, the results of the analysis remain valid regardless of the year. If the analysis is repeated with the 2015 AIME and life expectancies, the absolute value of the couple's advantage may change, but the patterns would remain the same.

| Spouse Age At Death | Earner Age At Death |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | 61                  | 62  | 64  | 66  | 68  | 70  | 72  | 74  | 76  | 78  | 80  | 82  | 84  | 86  | 88  | 90  | 92  | 94  | 96  | 98  | 100 |
| 62                  | 62                  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 11  | 6   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| 64                  | 64                  | 59  | 31  | 31  | 31  | 31  | 31  | 31  | 31  | 31  | 31  | 27  | 19  | 10  | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
| 66                  | 66                  | 105 | 77  | 51  | 51  | 51  | 51  | 51  | 51  | 51  | 51  | 46  | 38  | 30  | 14  | 14  | 14  | 14  | 14  | 14  | 14  |
| 68                  | 68                  | 148 | 120 | 94  | 69  | 69  | 69  | 69  | 69  | 69  | 69  | 65  | 57  | 48  | 40  | 40  | 40  | 40  | 40  | 40  | 40  |
| 70                  | 70                  | 189 | 161 | 135 | 110 | 86  | 86  | 86  | 86  | 86  | 86  | 82  | 74  | 66  | 65  | 65  | 65  | 65  | 65  | 65  | 65  |
| 72                  | 72                  | 227 | 199 | 173 | 148 | 125 | 103 | 103 | 103 | 103 | 103 | 98  | 90  | 88  | 88  | 88  | 88  | 88  | 88  | 88  | 88  |
| 74                  | 74                  | 264 | 236 | 209 | 184 | 161 | 139 | 118 | 118 | 118 | 118 | 114 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 |
| 76                  | 76                  | 298 | 270 | 243 | 218 | 195 | 173 | 152 | 133 | 133 | 133 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 | 130 |
| 78                  | 78                  | 330 | 302 | 275 | 251 | 227 | 205 | 184 | 165 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |
| 80                  | 80                  | 360 | 332 | 306 | 281 | 257 | 235 | 215 | 195 | 180 | 168 | 168 | 168 | 168 | 168 | 168 | 168 | 168 | 168 | 168 | 168 |
| 82                  | 82                  | 389 | 361 | 334 | 309 | 286 | 264 | 243 | 223 | 209 | 198 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 | 185 |
| 84                  | 84                  | 416 | 388 | 361 | 336 | 313 | 291 | 270 | 250 | 240 | 231 | 218 | 202 | 202 | 202 | 202 | 202 | 202 | 202 | 202 | 202 |
| 86                  | 86                  | 441 | 413 | 387 | 362 | 338 | 316 | 295 | 281 | 272 | 263 | 250 | 233 | 217 | 217 | 217 | 217 | 217 | 217 | 217 | 217 |
| 88                  | 88                  | 465 | 437 | 410 | 386 | 362 | 341 | 330 | 320 | 310 | 301 | 288 | 272 | 255 | 232 | 232 | 232 | 232 | 232 | 232 | 232 |
| 90                  | 90                  | 487 | 459 | 433 | 408 | 389 | 377 | 366 | 356 | 346 | 337 | 324 | 308 | 291 | 268 | 245 | 245 | 245 | 245 | 245 | 245 |
| 92                  | 92                  | 509 | 481 | 454 | 433 | 423 | 411 | 400 | 390 | 380 | 371 | 358 | 342 | 325 | 302 | 279 | 258 | 258 | 258 | 258 | 258 |
| 94                  | 94                  | 529 | 501 | 474 | 463 | 455 | 443 | 432 | 422 | 412 | 403 | 390 | 374 | 358 | 334 | 311 | 290 | 270 | 270 | 270 | 270 |
| 96                  | 96                  | 548 | 520 | 493 | 492 | 485 | 473 | 462 | 452 | 442 | 433 | 420 | 404 | 388 | 364 | 342 | 320 | 301 | 282 | 282 | 282 |
| 98                  | 98                  | 565 | 537 | 511 | 518 | 513 | 502 | 491 | 480 | 471 | 462 | 449 | 432 | 416 | 392 | 370 | 349 | 329 | 310 | 293 | 293 |
| 100                 | 100                 | 582 | 554 | 529 | 544 | 540 | 529 | 518 | 507 | 498 | 488 | 475 | 459 | 443 | 419 | 397 | 376 | 356 | 337 | 319 | 303 |

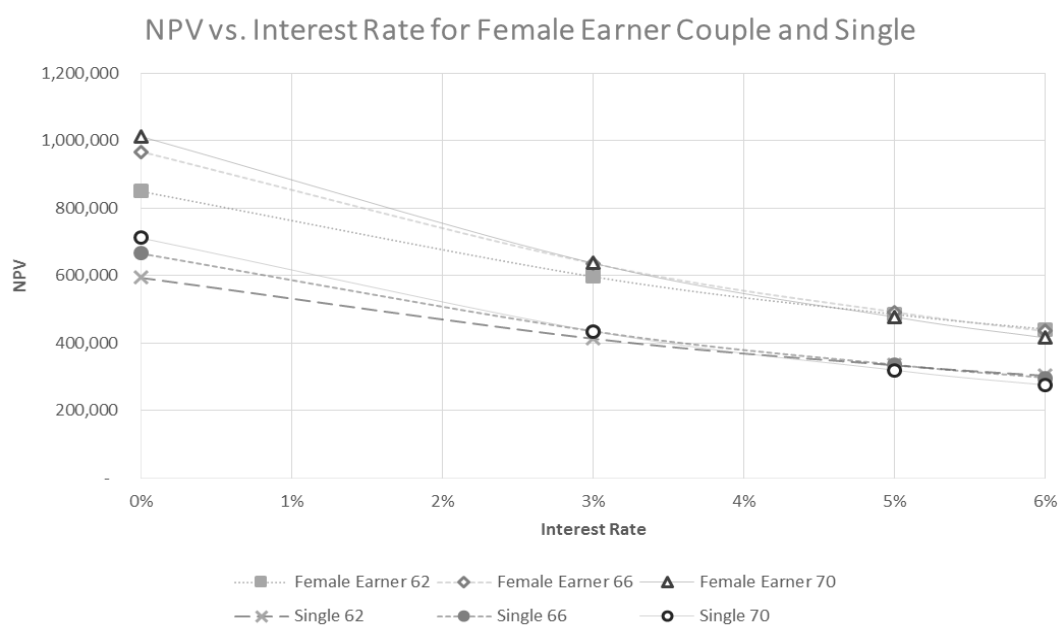
Key: Couple's Advantage

Note: Values are in \$1000's

**Figure 4.1:** The couple's annual advantage (in age 62 dollars) over a single earner at 3% interest



**Figure 4.2:** The couple's advantage with a male earner vs. a male single earner



**Figure 4.3:** The couple's advantage with a female earner over a female single earner

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## Chapter 5 Conclusion

The largest contributors to maximizing lifetime social security benefits for a couple are the estimated age at death and their AIME. Couples have much higher benefits over a single earner simply due to the fact that they have access to survivor and spousal benefits that increase their annual income significantly. The starting age of a couple also plays a large role in their total income, as do current interest rates. At 3% interest, waiting until age 66 and 70 to collect benefits is comparable and produces the highest NPV, while at higher interest rates, starting at 62 is the best option.

Couples can expect to see a \$136,559 to \$384,989 increase in retirement income when compared to a single earner. When comparing the NPV of the estimated age at death for male and female earners (female age 86 and male age 84) in both the couple and single case, a male earner who will die at age 84 (and whose female spouse will die at age 86) can expect to see a 53% to 61% increase in NPV depending on when he begins benefits (age 62, 66, or 70). A female earner can expect to see a 44%-46% increase in NPV over her single female counterpart. These results hold true, although the absolute numbers may change, regardless of the reference year for AIME and life expectancies due to spousal and survivor benefits and the fact that female life expectancies are consistently higher than male life expectancies.

This case study focuses on a common issue faced by many people, but it is only the beginning. This approach can be expanded to include couples of different ages and couples of the same sex. As social security continues to be the main form of income for many of the elderly people in our communities, social security research will continue to be of high interest and concern.

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## Appendices

### Appendix A Matrices of Couple's Cases

| Spouse Age At Death | Earner Age At Death |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                     | 61                  | 62    | 64    | 66    | 68    | 70    | 72    | 74    | 76    | 78    | 80    | 82    | 84    | 86    | 88    | 90    | 92    | 94    | 96    | 98    | 100   |
| 62                  |                     | 35    | 82    | 130   | 178   | 225   | 273   | 320   | 368   | 415   | 463   | 511   | 558   | 606   | 653   | 701   | 748   | 796   | 844   | 891   | 939   |
| 64                  |                     | 87    | 105   | 152   | 200   | 247   | 295   | 342   | 390   | 438   | 485   | 533   | 580   | 628   | 675   | 723   | 771   | 818   | 866   | 913   | 961   |
| 66                  |                     | 140   | 157   | 174   | 222   | 270   | 317   | 365   | 412   | 460   | 507   | 555   | 603   | 650   | 698   | 745   | 793   | 840   | 888   | 936   | 983   |
| 68                  |                     | 192   | 209   | 227   | 244   | 292   | 339   | 387   | 434   | 482   | 530   | 577   | 625   | 672   | 720   | 767   | 815   | 863   | 910   | 958   | 1,005 |
| 70                  |                     | 244   | 262   | 279   | 297   | 314   | 362   | 409   | 457   | 504   | 552   | 599   | 647   | 695   | 742   | 790   | 837   | 885   | 932   | 980   | 1,027 |
| 72                  |                     | 297   | 314   | 331   | 349   | 366   | 384   | 431   | 479   | 526   | 574   | 622   | 669   | 717   | 764   | 812   | 859   | 907   | 955   | 1,002 | 1,050 |
| 74                  |                     | 349   | 366   | 384   | 401   | 419   | 436   | 453   | 501   | 549   | 596   | 644   | 691   | 739   | 786   | 834   | 882   | 929   | 977   | 1,024 | 1,072 |
| 76                  |                     | 401   | 419   | 436   | 453   | 471   | 488   | 506   | 523   | 571   | 618   | 666   | 714   | 761   | 809   | 856   | 904   | 951   | 999   | 1,047 | 1,094 |
| 78                  |                     | 453   | 471   | 488   | 506   | 523   | 541   | 558   | 576   | 593   | 641   | 688   | 736   | 783   | 831   | 878   | 926   | 974   | 1,021 | 1,069 | 1,116 |
| 80                  |                     | 506   | 523   | 541   | 558   | 576   | 593   | 610   | 628   | 645   | 663   | 710   | 758   | 805   | 853   | 901   | 948   | 996   | 1,043 | 1,091 | 1,138 |
| 82                  |                     | 558   | 576   | 593   | 610   | 628   | 645   | 663   | 680   | 698   | 715   | 733   | 780   | 828   | 875   | 923   | 970   | 1,018 | 1,066 | 1,113 | 1,161 |
| 84                  |                     | 610   | 628   | 645   | 663   | 680   | 698   | 715   | 733   | 750   | 767   | 785   | 802   | 850   | 897   | 945   | 993   | 1,040 | 1,088 | 1,135 | 1,183 |
| 86                  |                     | 663   | 680   | 698   | 715   | 733   | 750   | 767   | 785   | 802   | 820   | 837   | 855   | 872   | 920   | 967   | 1,015 | 1,062 | 1,110 | 1,158 | 1,205 |
| 88                  |                     | 715   | 733   | 750   | 767   | 785   | 802   | 820   | 837   | 855   | 872   | 890   | 907   | 924   | 942   | 989   | 1,037 | 1,085 | 1,132 | 1,180 | 1,227 |
| 90                  |                     | 767   | 785   | 802   | 820   | 837   | 855   | 872   | 890   | 907   | 924   | 942   | 959   | 977   | 994   | 1,012 | 1,059 | 1,107 | 1,154 | 1,202 | 1,249 |
| 92                  |                     | 820   | 837   | 855   | 872   | 890   | 907   | 924   | 942   | 959   | 977   | 994   | 1,012 | 1,029 | 1,047 | 1,064 | 1,081 | 1,129 | 1,177 | 1,224 | 1,272 |
| 94                  |                     | 872   | 890   | 907   | 924   | 942   | 959   | 977   | 994   | 1,012 | 1,029 | 1,047 | 1,064 | 1,081 | 1,099 | 1,116 | 1,134 | 1,151 | 1,199 | 1,246 | 1,294 |
| 96                  |                     | 924   | 942   | 959   | 977   | 994   | 1,012 | 1,029 | 1,047 | 1,064 | 1,081 | 1,099 | 1,116 | 1,134 | 1,151 | 1,169 | 1,186 | 1,203 | 1,221 | 1,268 | 1,316 |
| 98                  |                     | 977   | 994   | 1,012 | 1,029 | 1,047 | 1,064 | 1,081 | 1,099 | 1,116 | 1,134 | 1,151 | 1,169 | 1,186 | 1,203 | 1,221 | 1,238 | 1,256 | 1,273 | 1,291 | 1,338 |
| 100                 |                     | 1,029 | 1,047 | 1,064 | 1,081 | 1,099 | 1,116 | 1,134 | 1,151 | 1,169 | 1,186 | 1,203 | 1,221 | 1,238 | 1,256 | 1,273 | 1,291 | 1,308 | 1,326 | 1,343 | 1,360 |

Note: Values are in \$1000's

**Figure A1: Couple's NPV for case 62-62 @ 0% interest**

| Spouse Age At Death |  | Earner Age At Death |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---------------------|--|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                     |  | 61                  | 62    | 64    | 66    | 68    | 70    | 72    | 74    | 76    | 78    | 80    | 82    | 84    | 86    | 88    | 90    | 92    | 94    | 96    | 98    |
| 62                  |  | 24                  | 71    | 119   | 166   | 214   | 262   | 309   | 357   | 404   | 452   | 499   | 547   | 595   | 642   | 690   | 737   | 785   | 832   | 880   | 928   |
| 64                  |  | 76                  | 71    | 119   | 166   | 214   | 262   | 309   | 357   | 404   | 452   | 499   | 547   | 595   | 642   | 690   | 737   | 785   | 832   | 880   | 928   |
| 66                  |  | 128                 | 124   | 135   | 182   | 230   | 277   | 325   | 373   | 420   | 468   | 515   | 563   | 610   | 658   | 706   | 753   | 801   | 848   | 896   | 943   |
| 68                  |  | 181                 | 176   | 187   | 214   | 262   | 309   | 357   | 404   | 452   | 499   | 547   | 595   | 642   | 690   | 737   | 785   | 832   | 880   | 928   | 975   |
| 70                  |  | 233                 | 228   | 239   | 266   | 293   | 341   | 388   | 436   | 484   | 531   | 579   | 626   | 674   | 721   | 769   | 817   | 864   | 912   | 959   | 1,007 |
| 72                  |  | 285                 | 281   | 292   | 319   | 346   | 373   | 420   | 468   | 515   | 563   | 610   | 658   | 706   | 753   | 801   | 848   | 896   | 943   | 991   | 1,039 |
| 74                  |  | 338                 | 333   | 344   | 371   | 398   | 425   | 452   | 499   | 547   | 595   | 642   | 690   | 737   | 785   | 832   | 880   | 928   | 975   | 1,023 | 1,070 |
| 76                  |  | 390                 | 385   | 396   | 423   | 450   | 477   | 504   | 531   | 579   | 626   | 674   | 721   | 769   | 817   | 864   | 912   | 959   | 1,007 | 1,054 | 1,102 |
| 78                  |  | 442                 | 438   | 449   | 476   | 503   | 530   | 557   | 584   | 610   | 658   | 706   | 753   | 801   | 848   | 896   | 943   | 991   | 1,039 | 1,086 | 1,134 |
| 80                  |  | 495                 | 490   | 501   | 528   | 555   | 582   | 609   | 636   | 663   | 690   | 737   | 785   | 832   | 880   | 928   | 975   | 1,023 | 1,070 | 1,118 | 1,165 |
| 82                  |  | 547                 | 542   | 553   | 580   | 607   | 634   | 661   | 688   | 715   | 742   | 769   | 817   | 864   | 912   | 959   | 1,007 | 1,054 | 1,102 | 1,150 | 1,197 |
| 84                  |  | 599                 | 595   | 606   | 633   | 660   | 687   | 714   | 740   | 767   | 794   | 821   | 848   | 896   | 943   | 991   | 1,039 | 1,086 | 1,134 | 1,181 | 1,229 |
| 86                  |  | 652                 | 647   | 658   | 685   | 712   | 739   | 766   | 793   | 820   | 847   | 874   | 901   | 928   | 975   | 1,023 | 1,070 | 1,118 | 1,165 | 1,213 | 1,261 |
| 88                  |  | 704                 | 699   | 710   | 737   | 764   | 791   | 818   | 845   | 872   | 899   | 926   | 953   | 980   | 1,007 | 1,054 | 1,102 | 1,150 | 1,197 | 1,245 | 1,292 |
| 90                  |  | 756                 | 752   | 763   | 790   | 817   | 844   | 871   | 897   | 924   | 951   | 978   | 1,005 | 1,032 | 1,059 | 1,086 | 1,134 | 1,181 | 1,229 | 1,276 | 1,324 |
| 92                  |  | 809                 | 804   | 815   | 842   | 869   | 896   | 923   | 950   | 977   | 1,004 | 1,031 | 1,058 | 1,085 | 1,112 | 1,138 | 1,165 | 1,213 | 1,261 | 1,308 | 1,356 |
| 94                  |  | 861                 | 856   | 867   | 894   | 921   | 948   | 975   | 1,002 | 1,029 | 1,056 | 1,083 | 1,110 | 1,137 | 1,164 | 1,191 | 1,218 | 1,245 | 1,292 | 1,340 | 1,387 |
| 96                  |  | 913                 | 909   | 920   | 947   | 974   | 1,001 | 1,027 | 1,054 | 1,081 | 1,108 | 1,135 | 1,162 | 1,189 | 1,216 | 1,243 | 1,270 | 1,297 | 1,324 | 1,372 | 1,419 |
| 98                  |  | 966                 | 961   | 972   | 999   | 1,026 | 1,053 | 1,080 | 1,107 | 1,134 | 1,161 | 1,188 | 1,215 | 1,242 | 1,268 | 1,295 | 1,322 | 1,349 | 1,376 | 1,403 | 1,451 |
| 100                 |  | 1,018               | 1,013 | 1,024 | 1,051 | 1,078 | 1,105 | 1,132 | 1,159 | 1,186 | 1,213 | 1,240 | 1,267 | 1,294 | 1,321 | 1,348 | 1,375 | 1,402 | 1,429 | 1,456 | 1,483 |

Note: Values are in \$1000's

**Figure A2: Couple's NPV for case 62-66 @ 0% interest**

| Spouse Age At Death |       | Earner Age At Death |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |    |
|---------------------|-------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|
|                     |       | 61                  | 62    | 64    | 66    | 68    | 70    | 72    | 74    | 76    | 78    | 80    | 82    | 84    | 86    | 88    | 90    | 92    | 94    | 96    | 98 |
| 62                  | -     | -                   | 32    | 95    | 159   | 222   | 285   | 349   | 412   | 476   | 539   | 603   | 666   | 729   | 793   | 856   | 920   | 983   | 1,047 | 1,110 |    |
| 64                  | 51    | -                   | 32    | 95    | 159   | 222   | 285   | 349   | 412   | 476   | 539   | 603   | 666   | 729   | 793   | 856   | 920   | 983   | 1,047 | 1,110 |    |
| 66                  | 109   | 60                  | 48    | 111   | 174   | 238   | 301   | 365   | 428   | 492   | 555   | 618   | 682   | 745   | 809   | 872   | 936   | 999   | 1,062 | 1,126 |    |
| 68                  | 163   | 121                 | 111   | 143   | 206   | 270   | 333   | 396   | 460   | 523   | 587   | 650   | 714   | 777   | 840   | 904   | 967   | 1,031 | 1,094 | 1,158 |    |
| 70                  | 218   | 181                 | 174   | 206   | 238   | 301   | 365   | 428   | 492   | 555   | 618   | 682   | 745   | 809   | 872   | 936   | 999   | 1,062 | 1,126 | 1,189 |    |
| 72                  | 272   | 242                 | 238   | 270   | 301   | 333   | 396   | 460   | 523   | 587   | 650   | 714   | 777   | 840   | 904   | 967   | 1,031 | 1,094 | 1,158 | 1,221 |    |
| 74                  | 326   | 302                 | 301   | 333   | 365   | 396   | 428   | 492   | 555   | 618   | 682   | 745   | 809   | 872   | 936   | 999   | 1,062 | 1,126 | 1,189 | 1,253 |    |
| 76                  | 381   | 362                 | 365   | 396   | 428   | 460   | 492   | 523   | 587   | 650   | 714   | 777   | 840   | 904   | 967   | 1,031 | 1,094 | 1,158 | 1,221 | 1,284 |    |
| 78                  | 435   | 423                 | 428   | 460   | 492   | 523   | 555   | 587   | 618   | 682   | 745   | 809   | 872   | 936   | 999   | 1,062 | 1,126 | 1,189 | 1,253 | 1,316 |    |
| 80                  | 489   | 483                 | 492   | 523   | 555   | 587   | 618   | 650   | 682   | 714   | 777   | 840   | 904   | 967   | 1,031 | 1,094 | 1,158 | 1,221 | 1,284 | 1,348 |    |
| 82                  | 544   | 544                 | 555   | 587   | 618   | 650   | 682   | 714   | 745   | 777   | 809   | 872   | 936   | 999   | 1,062 | 1,126 | 1,189 | 1,253 | 1,316 | 1,379 |    |
| 84                  | 598   | 604                 | 618   | 650   | 682   | 714   | 745   | 777   | 809   | 840   | 872   | 904   | 967   | 1,031 | 1,094 | 1,158 | 1,221 | 1,284 | 1,348 | 1,411 |    |
| 86                  | 653   | 665                 | 682   | 714   | 745   | 777   | 809   | 840   | 872   | 904   | 936   | 967   | 999   | 1,062 | 1,126 | 1,189 | 1,253 | 1,316 | 1,379 | 1,443 |    |
| 88                  | 707   | 725                 | 745   | 777   | 809   | 840   | 872   | 904   | 936   | 967   | 999   | 1,031 | 1,062 | 1,094 | 1,158 | 1,221 | 1,284 | 1,348 | 1,411 | 1,475 |    |
| 90                  | 761   | 785                 | 809   | 840   | 872   | 904   | 936   | 967   | 999   | 1,031 | 1,062 | 1,094 | 1,126 | 1,158 | 1,189 | 1,253 | 1,316 | 1,379 | 1,443 | 1,506 |    |
| 92                  | 816   | 846                 | 872   | 904   | 936   | 967   | 999   | 1,031 | 1,062 | 1,094 | 1,126 | 1,158 | 1,189 | 1,221 | 1,253 | 1,284 | 1,348 | 1,411 | 1,475 | 1,538 |    |
| 94                  | 870   | 906                 | 936   | 967   | 999   | 1,031 | 1,062 | 1,094 | 1,126 | 1,158 | 1,189 | 1,221 | 1,253 | 1,284 | 1,316 | 1,348 | 1,379 | 1,443 | 1,506 | 1,570 |    |
| 96                  | 925   | 967                 | 999   | 1,031 | 1,062 | 1,094 | 1,126 | 1,158 | 1,189 | 1,221 | 1,253 | 1,284 | 1,316 | 1,348 | 1,379 | 1,411 | 1,443 | 1,475 | 1,538 | 1,601 |    |
| 98                  | 979   | 1,027               | 1,062 | 1,094 | 1,126 | 1,158 | 1,189 | 1,221 | 1,253 | 1,284 | 1,316 | 1,348 | 1,379 | 1,411 | 1,443 | 1,475 | 1,506 | 1,538 | 1,570 | 1,633 |    |
| 100                 | 1,033 | 1,087               | 1,126 | 1,158 | 1,189 | 1,221 | 1,253 | 1,284 | 1,316 | 1,348 | 1,379 | 1,411 | 1,443 | 1,475 | 1,506 | 1,538 | 1,570 | 1,601 | 1,633 | 1,665 |    |

Note: Values are in \$1000's

**Figure A3: Couple's NPV for case 66-66 @ 0% interest**

| Spouse Age At Death |       | Earner Age At Death |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |
|---------------------|-------|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| 61                  | 62    | 64                  | 66    | 68    | 70    | 72    | 74    | 76    | 78    | 80    | 82    | 84    | 86    | 88    | 90    | 92    | 94    | 96    | 98    | 100   |  |
| 62                  | -     | -                   | -     | -     | 42    | 126   | 209   | 293   | 377   | 460   | 544   | 628   | 712   | 795   | 879   | 963   | 1,047 | 1,130 | 1,214 | 1,298 |  |
| 64                  | 51    | -                   | -     | -     | 42    | 126   | 209   | 293   | 377   | 460   | 544   | 628   | 712   | 795   | 879   | 963   | 1,047 | 1,130 | 1,214 | 1,298 |  |
| 66                  | 109   | 60                  | 16    | 16    | 58    | 141   | 225   | 309   | 393   | 476   | 560   | 644   | 727   | 811   | 895   | 979   | 1,062 | 1,146 | 1,230 | 1,314 |  |
| 68                  | 163   | 121                 | 84    | 48    | 89    | 173   | 257   | 341   | 424   | 508   | 592   | 675   | 759   | 843   | 927   | 1,010 | 1,094 | 1,178 | 1,262 | 1,345 |  |
| 70                  | 218   | 181                 | 153   | 126   | 121   | 205   | 289   | 372   | 456   | 540   | 623   | 707   | 791   | 875   | 958   | 1,042 | 1,126 | 1,210 | 1,293 | 1,377 |  |
| 72                  | 272   | 242                 | 221   | 205   | 205   | 237   | 320   | 404   | 488   | 571   | 655   | 739   | 823   | 906   | 990   | 1,074 | 1,158 | 1,241 | 1,325 | 1,409 |  |
| 74                  | 326   | 302                 | 290   | 284   | 289   | 320   | 352   | 436   | 519   | 603   | 687   | 771   | 854   | 938   | 1,022 | 1,105 | 1,189 | 1,273 | 1,357 | 1,440 |  |
| 76                  | 381   | 362                 | 358   | 362   | 372   | 404   | 436   | 467   | 551   | 635   | 719   | 802   | 886   | 970   | 1,053 | 1,137 | 1,221 | 1,305 | 1,388 | 1,472 |  |
| 78                  | 435   | 423                 | 427   | 441   | 456   | 488   | 519   | 551   | 583   | 667   | 750   | 834   | 918   | 1,001 | 1,085 | 1,169 | 1,253 | 1,336 | 1,420 | 1,504 |  |
| 80                  | 489   | 483                 | 495   | 519   | 540   | 571   | 603   | 635   | 667   | 698   | 782   | 866   | 949   | 1,033 | 1,117 | 1,201 | 1,284 | 1,368 | 1,452 | 1,536 |  |
| 82                  | 544   | 544                 | 564   | 598   | 623   | 655   | 687   | 719   | 750   | 782   | 814   | 897   | 981   | 1,065 | 1,149 | 1,232 | 1,316 | 1,400 | 1,484 | 1,567 |  |
| 84                  | 598   | 604                 | 632   | 677   | 707   | 739   | 771   | 802   | 834   | 866   | 897   | 929   | 1,013 | 1,097 | 1,180 | 1,264 | 1,348 | 1,431 | 1,515 | 1,599 |  |
| 86                  | 653   | 665                 | 701   | 755   | 791   | 823   | 854   | 886   | 918   | 949   | 981   | 1,013 | 1,045 | 1,128 | 1,212 | 1,296 | 1,379 | 1,463 | 1,547 | 1,631 |  |
| 88                  | 707   | 725                 | 769   | 834   | 875   | 906   | 938   | 970   | 1,001 | 1,033 | 1,065 | 1,097 | 1,128 | 1,160 | 1,244 | 1,327 | 1,411 | 1,495 | 1,579 | 1,662 |  |
| 90                  | 761   | 785                 | 838   | 913   | 958   | 990   | 1,022 | 1,053 | 1,085 | 1,117 | 1,149 | 1,180 | 1,212 | 1,244 | 1,275 | 1,359 | 1,443 | 1,527 | 1,610 | 1,694 |  |
| 92                  | 816   | 846                 | 906   | 991   | 1,042 | 1,074 | 1,105 | 1,137 | 1,169 | 1,201 | 1,232 | 1,264 | 1,296 | 1,327 | 1,359 | 1,391 | 1,475 | 1,558 | 1,642 | 1,726 |  |
| 94                  | 870   | 906                 | 975   | 1,070 | 1,126 | 1,158 | 1,189 | 1,221 | 1,253 | 1,284 | 1,316 | 1,348 | 1,379 | 1,411 | 1,443 | 1,475 | 1,506 | 1,590 | 1,674 | 1,758 |  |
| 96                  | 925   | 967                 | 1,043 | 1,149 | 1,210 | 1,241 | 1,273 | 1,305 | 1,336 | 1,368 | 1,400 | 1,431 | 1,463 | 1,495 | 1,527 | 1,558 | 1,590 | 1,622 | 1,705 | 1,789 |  |
| 98                  | 979   | 1,027               | 1,112 | 1,227 | 1,293 | 1,325 | 1,357 | 1,388 | 1,420 | 1,452 | 1,484 | 1,515 | 1,547 | 1,579 | 1,610 | 1,642 | 1,674 | 1,705 | 1,737 | 1,821 |  |
| 100                 | 1,033 | 1,087               | 1,180 | 1,306 | 1,377 | 1,409 | 1,440 | 1,472 | 1,504 | 1,536 | 1,567 | 1,599 | 1,631 | 1,662 | 1,694 | 1,726 | 1,758 | 1,789 | 1,821 | 1,853 |  |

Note: Values are in \$1000's

Note: Values are in \$1000's

**Figure A4: Couple's NPV for case 70-66 @ 0% interest**

| Spouse Age At Death | Earner Age At Death |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | 61                  | 62  | 64  | 66  | 68  | 70  | 72  | 74  | 76  | 78  | 80  | 82  | 84  | 86  | 88  | 90  | 92  | 94  | 96  | 98  | 100 |
| 62                  |                     | 34  | 78  | 120 | 159 | 196 | 231 | 264 | 295 | 324 | 351 | 377 | 402 | 425 | 447 | 467 | 486 | 505 | 522 | 538 | 553 |
| 64                  |                     | 82  | 99  | 140 | 180 | 217 | 251 | 284 | 315 | 345 | 372 | 398 | 422 | 446 | 467 | 488 | 507 | 525 | 542 | 559 | 574 |
| 66                  |                     | 128 | 144 | 160 | 199 | 236 | 271 | 304 | 335 | 364 | 392 | 417 | 442 | 465 | 487 | 507 | 527 | 545 | 562 | 578 | 593 |
| 68                  |                     | 171 | 188 | 203 | 217 | 254 | 289 | 322 | 353 | 382 | 410 | 436 | 460 | 483 | 505 | 526 | 545 | 563 | 580 | 596 | 612 |
| 70                  |                     | 212 | 228 | 244 | 258 | 272 | 306 | 339 | 370 | 400 | 427 | 453 | 478 | 501 | 522 | 543 | 562 | 580 | 597 | 614 | 629 |
| 72                  |                     | 251 | 267 | 282 | 296 | 310 | 323 | 356 | 387 | 416 | 443 | 469 | 494 | 517 | 539 | 559 | 578 | 597 | 614 | 630 | 645 |
| 74                  |                     | 287 | 303 | 318 | 333 | 346 | 359 | 371 | 402 | 431 | 459 | 485 | 509 | 532 | 554 | 574 | 594 | 612 | 629 | 645 | 661 |
| 76                  |                     | 321 | 337 | 352 | 367 | 380 | 393 | 405 | 416 | 446 | 473 | 499 | 524 | 547 | 568 | 589 | 608 | 626 | 644 | 660 | 675 |
| 78                  |                     | 353 | 369 | 384 | 399 | 412 | 425 | 437 | 449 | 459 | 487 | 513 | 537 | 560 | 582 | 603 | 622 | 640 | 657 | 673 | 689 |
| 80                  |                     | 383 | 399 | 415 | 429 | 443 | 455 | 467 | 479 | 490 | 500 | 526 | 550 | 573 | 595 | 615 | 635 | 653 | 670 | 686 | 701 |
| 82                  |                     | 412 | 428 | 443 | 458 | 471 | 484 | 496 | 507 | 518 | 528 | 538 | 562 | 585 | 607 | 627 | 647 | 665 | 682 | 698 | 714 |
| 84                  |                     | 439 | 455 | 470 | 485 | 498 | 511 | 523 | 534 | 545 | 555 | 565 | 574 | 597 | 618 | 639 | 658 | 676 | 694 | 710 | 725 |
| 86                  |                     | 464 | 480 | 496 | 510 | 523 | 536 | 548 | 560 | 570 | 580 | 590 | 599 | 607 | 629 | 650 | 669 | 687 | 704 | 721 | 736 |
| 88                  |                     | 488 | 504 | 519 | 534 | 547 | 560 | 572 | 584 | 594 | 604 | 614 | 623 | 631 | 639 | 660 | 679 | 697 | 714 | 731 | 746 |
| 90                  |                     | 510 | 527 | 542 | 556 | 570 | 583 | 595 | 606 | 617 | 627 | 636 | 645 | 654 | 662 | 669 | 689 | 707 | 724 | 740 | 755 |
| 92                  |                     | 532 | 548 | 563 | 578 | 591 | 604 | 616 | 627 | 638 | 648 | 658 | 667 | 675 | 683 | 691 | 698 | 716 | 733 | 749 | 764 |
| 94                  |                     | 552 | 568 | 583 | 598 | 611 | 624 | 636 | 647 | 658 | 668 | 678 | 687 | 695 | 703 | 711 | 718 | 724 | 742 | 758 | 773 |
| 96                  |                     | 571 | 587 | 602 | 616 | 630 | 643 | 655 | 666 | 677 | 687 | 697 | 706 | 714 | 722 | 730 | 737 | 743 | 750 | 766 | 781 |
| 98                  |                     | 588 | 605 | 620 | 634 | 648 | 661 | 673 | 684 | 695 | 705 | 714 | 723 | 732 | 740 | 747 | 754 | 761 | 767 | 773 | 789 |
| 100                 |                     | 605 | 621 | 637 | 651 | 665 | 677 | 689 | 701 | 712 | 722 | 731 | 740 | 749 | 757 | 764 | 771 | 778 | 784 | 790 | 796 |

Note: Values are in \$1000's

Note: Values are in \$1000's

**Figure A5: Couple's NPV for case 62-62 @ 3% interest**

|                     |     | Earner Age At Death |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|-----|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     |     | 61                  | 62  | 64  | 66  | 68  | 70  | 72  | 74  | 76  | 78  | 80  | 82  | 84  | 86  | 88  | 90  | 92  | 94  | 96  | 98  |
| Spouse Age At Death | 62  | 23                  | 67  | 109 | 148 | 185 | 220 | 253 | 284 | 313 | 341 | 367 | 391 | 414 | 436 | 456 | 476 | 494 | 511 | 527 | 542 |
|                     | 64  | 72                  | 67  | 109 | 148 | 185 | 220 | 253 | 284 | 313 | 341 | 367 | 391 | 414 | 436 | 456 | 476 | 494 | 511 | 527 | 542 |
|                     | 66  | 118                 | 113 | 123 | 162 | 199 | 234 | 267 | 298 | 327 | 354 | 380 | 405 | 428 | 450 | 470 | 489 | 508 | 525 | 541 | 556 |
|                     | 68  | 161                 | 156 | 166 | 188 | 225 | 260 | 293 | 324 | 353 | 381 | 406 | 431 | 454 | 476 | 496 | 516 | 534 | 551 | 567 | 582 |
|                     | 70  | 201                 | 197 | 206 | 229 | 250 | 285 | 317 | 348 | 378 | 405 | 431 | 456 | 479 | 500 | 521 | 540 | 558 | 576 | 592 | 607 |
|                     | 72  | 240                 | 235 | 245 | 267 | 288 | 308 | 341 | 372 | 401 | 428 | 454 | 479 | 502 | 524 | 544 | 563 | 582 | 599 | 615 | 630 |
|                     | 74  | 276                 | 272 | 281 | 303 | 324 | 344 | 363 | 394 | 423 | 450 | 476 | 501 | 524 | 546 | 566 | 585 | 604 | 621 | 637 | 652 |
|                     | 76  | 310                 | 306 | 315 | 337 | 358 | 378 | 397 | 414 | 443 | 471 | 497 | 521 | 545 | 566 | 587 | 606 | 624 | 641 | 658 | 673 |
|                     | 78  | 342                 | 338 | 347 | 369 | 390 | 410 | 429 | 446 | 463 | 491 | 516 | 541 | 564 | 586 | 606 | 626 | 644 | 661 | 677 | 692 |
|                     | 80  | 372                 | 368 | 378 | 400 | 421 | 441 | 459 | 477 | 493 | 509 | 535 | 559 | 582 | 604 | 625 | 644 | 662 | 679 | 695 | 711 |
|                     | 82  | 401                 | 397 | 406 | 428 | 449 | 469 | 488 | 505 | 522 | 537 | 552 | 577 | 600 | 621 | 642 | 661 | 679 | 697 | 713 | 728 |
|                     | 84  | 428                 | 423 | 433 | 455 | 476 | 496 | 515 | 532 | 549 | 564 | 579 | 593 | 616 | 638 | 658 | 677 | 696 | 713 | 729 | 744 |
|                     | 86  | 453                 | 449 | 458 | 481 | 502 | 521 | 540 | 558 | 574 | 590 | 604 | 618 | 631 | 653 | 674 | 693 | 711 | 728 | 744 | 760 |
|                     | 88  | 477                 | 473 | 482 | 505 | 525 | 545 | 564 | 581 | 598 | 614 | 628 | 642 | 655 | 668 | 688 | 707 | 726 | 743 | 759 | 774 |
|                     | 90  | 500                 | 495 | 505 | 527 | 548 | 568 | 586 | 604 | 621 | 636 | 651 | 665 | 678 | 690 | 702 | 721 | 739 | 756 | 773 | 788 |
|                     | 92  | 521                 | 517 | 526 | 548 | 569 | 589 | 608 | 625 | 642 | 657 | 672 | 686 | 699 | 711 | 723 | 734 | 752 | 769 | 785 | 801 |
| 94                  | 541 | 537                 | 546 | 568 | 589 | 609 | 628 | 645 | 662 | 677 | 692 | 706 | 719 | 731 | 743 | 754 | 764 | 781 | 798 | 813 |     |
| 96                  | 560 | 555                 | 565 | 587 | 608 | 628 | 647 | 664 | 681 | 696 | 711 | 725 | 738 | 750 | 762 | 773 | 783 | 793 | 809 | 824 |     |
| 98                  | 578 | 573                 | 583 | 605 | 626 | 646 | 664 | 682 | 698 | 714 | 729 | 743 | 756 | 768 | 780 | 791 | 801 | 811 | 820 | 835 |     |
| 100                 | 594 | 590                 | 600 | 622 | 643 | 662 | 681 | 699 | 715 | 731 | 746 | 759 | 772 | 785 | 796 | 807 | 818 | 827 | 837 | 845 |     |

Note: Values are in \$1000's

Note: Values are in \$1000's

**Figure A6: Couple's NPV for case 62-66 @ 3% interest**

|                     |     | Earner Age At Death |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|-----|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Spouse Age At Death | 61  | 62                  | 64  | 66  | 68  | 70  | 72  | 74  | 76  | 78  | 80  | 82  | 84  | 86  | 88  | 90  | 92  | 94  | 96  | 98  | 100 |
|                     | 62  | -                   | -   | 27  | 80  | 129 | 176 | 219 | 261 | 300 | 336 | 371 | 404 | 434 | 463 | 491 | 516 | 541 | 564 | 585 | 605 |
|                     | 64  | 48                  | -   | 27  | 80  | 129 | 176 | 219 | 261 | 300 | 336 | 371 | 404 | 434 | 463 | 491 | 516 | 541 | 564 | 585 | 605 |
|                     | 66  | 98                  | 53  | 41  | 93  | 143 | 189 | 233 | 274 | 313 | 350 | 385 | 417 | 448 | 477 | 504 | 530 | 554 | 577 | 599 | 619 |
|                     | 68  | 143                 | 103 | 93  | 120 | 169 | 215 | 259 | 301 | 340 | 376 | 411 | 443 | 474 | 503 | 530 | 556 | 581 | 603 | 625 | 645 |
|                     | 70  | 185                 | 150 | 143 | 169 | 194 | 240 | 284 | 325 | 364 | 401 | 435 | 468 | 499 | 528 | 555 | 581 | 605 | 628 | 650 | 670 |
|                     | 72  | 225                 | 194 | 189 | 215 | 240 | 263 | 307 | 348 | 387 | 424 | 459 | 491 | 522 | 551 | 578 | 604 | 628 | 651 | 673 | 693 |
|                     | 74  | 263                 | 236 | 233 | 259 | 284 | 307 | 329 | 370 | 409 | 446 | 481 | 513 | 544 | 573 | 600 | 626 | 650 | 673 | 695 | 715 |
|                     | 76  | 298                 | 275 | 274 | 301 | 325 | 348 | 370 | 391 | 430 | 467 | 501 | 534 | 565 | 594 | 621 | 647 | 671 | 694 | 715 | 736 |
|                     | 78  | 332                 | 312 | 313 | 340 | 364 | 387 | 409 | 430 | 449 | 486 | 521 | 553 | 584 | 613 | 640 | 666 | 690 | 713 | 735 | 755 |
|                     | 80  | 363                 | 347 | 350 | 376 | 401 | 424 | 446 | 467 | 486 | 505 | 539 | 572 | 603 | 631 | 659 | 685 | 709 | 732 | 753 | 774 |
|                     | 82  | 393                 | 380 | 385 | 411 | 435 | 459 | 481 | 501 | 521 | 539 | 556 | 589 | 620 | 649 | 676 | 702 | 726 | 749 | 771 | 791 |
|                     | 84  | 421                 | 411 | 417 | 443 | 468 | 491 | 513 | 534 | 553 | 572 | 589 | 605 | 636 | 665 | 692 | 718 | 742 | 765 | 787 | 807 |
|                     | 86  | 447                 | 441 | 448 | 474 | 499 | 522 | 544 | 565 | 584 | 603 | 620 | 636 | 652 | 680 | 708 | 734 | 758 | 781 | 802 | 823 |
|                     | 88  | 472                 | 468 | 477 | 503 | 528 | 551 | 573 | 594 | 613 | 631 | 649 | 665 | 680 | 695 | 722 | 748 | 772 | 795 | 817 | 837 |
|                     | 90  | 495                 | 494 | 504 | 530 | 555 | 578 | 600 | 621 | 640 | 659 | 676 | 692 | 708 | 722 | 736 | 762 | 786 | 809 | 830 | 851 |
|                     | 92  | 517                 | 519 | 530 | 556 | 581 | 604 | 626 | 647 | 666 | 685 | 702 | 718 | 734 | 748 | 762 | 775 | 799 | 822 | 843 | 864 |
|                     | 94  | 538                 | 542 | 554 | 581 | 605 | 628 | 650 | 671 | 690 | 709 | 726 | 742 | 758 | 772 | 786 | 799 | 811 | 834 | 855 | 876 |
|                     | 96  | 558                 | 564 | 577 | 603 | 628 | 651 | 673 | 694 | 713 | 732 | 749 | 765 | 781 | 795 | 809 | 822 | 834 | 845 | 867 | 887 |
|                     | 98  | 576                 | 584 | 599 | 625 | 650 | 673 | 695 | 715 | 735 | 753 | 771 | 787 | 802 | 817 | 830 | 843 | 855 | 867 | 878 | 898 |
|                     | 100 | 594                 | 604 | 619 | 645 | 670 | 693 | 715 | 736 | 755 | 774 | 791 | 807 | 823 | 837 | 851 | 864 | 876 | 887 | 898 | 908 |

Note: Values are in \$1000's

**Figure A7: Couple's NPV for case 66-66 @ 3% interest**

|                     |     | Earner Age At Death |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|-----|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Spouse Age At Death | 61  | 62                  | 64  | 66  | 68  | 70  | 72  | 74  | 76  | 78  | 80  | 82  | 84  | 86  | 88  | 90  | 92  | 94  | 96  | 98  | 100 |
|                     | 62  | -                   | -   | -   | -   | 32  | 93  | 151 | 206 | 257 | 306 | 351 | 394 | 435 | 473 | 509 | 543 | 575 | 606 | 634 | 661 |
|                     | 64  | 48                  | -   | -   | -   | 32  | 93  | 151 | 206 | 257 | 306 | 351 | 394 | 435 | 473 | 509 | 543 | 575 | 606 | 634 | 661 |
|                     | 66  | 98                  | 53  | 14  | 14  | 46  | 107 | 165 | 220 | 271 | 319 | 365 | 408 | 449 | 487 | 523 | 557 | 589 | 619 | 648 | 675 |
|                     | 68  | 143                 | 103 | 70  | 40  | 72  | 133 | 191 | 246 | 297 | 346 | 391 | 434 | 475 | 513 | 549 | 583 | 615 | 645 | 674 | 701 |
|                     | 70  | 185                 | 150 | 123 | 101 | 97  | 158 | 216 | 270 | 322 | 370 | 416 | 459 | 500 | 538 | 574 | 608 | 640 | 670 | 699 | 725 |
|                     | 72  | 225                 | 194 | 174 | 159 | 158 | 181 | 239 | 294 | 345 | 394 | 439 | 482 | 523 | 561 | 597 | 631 | 663 | 693 | 722 | 749 |
|                     | 74  | 263                 | 236 | 221 | 213 | 216 | 239 | 261 | 316 | 367 | 415 | 461 | 504 | 545 | 583 | 619 | 653 | 685 | 715 | 744 | 771 |
|                     | 76  | 298                 | 275 | 266 | 264 | 270 | 294 | 316 | 336 | 388 | 436 | 482 | 525 | 565 | 604 | 640 | 674 | 706 | 736 | 764 | 791 |
|                     | 78  | 332                 | 312 | 308 | 313 | 322 | 345 | 367 | 388 | 407 | 456 | 501 | 544 | 585 | 623 | 659 | 693 | 725 | 755 | 784 | 811 |
|                     | 80  | 363                 | 347 | 347 | 358 | 370 | 394 | 415 | 436 | 456 | 474 | 520 | 563 | 603 | 642 | 678 | 712 | 744 | 774 | 802 | 829 |
|                     | 82  | 393                 | 380 | 385 | 401 | 416 | 439 | 461 | 482 | 501 | 520 | 537 | 580 | 621 | 659 | 695 | 729 | 761 | 791 | 820 | 846 |
|                     | 84  | 421                 | 411 | 420 | 441 | 459 | 482 | 504 | 525 | 544 | 563 | 580 | 596 | 637 | 675 | 711 | 745 | 777 | 807 | 836 | 863 |
|                     | 86  | 447                 | 441 | 453 | 480 | 500 | 523 | 545 | 565 | 585 | 603 | 621 | 637 | 652 | 690 | 727 | 761 | 793 | 823 | 851 | 878 |
|                     | 88  | 472                 | 468 | 485 | 516 | 538 | 561 | 583 | 604 | 623 | 642 | 659 | 675 | 690 | 705 | 741 | 775 | 807 | 837 | 866 | 893 |
|                     | 90  | 495                 | 494 | 514 | 549 | 574 | 597 | 619 | 640 | 659 | 678 | 695 | 711 | 727 | 741 | 755 | 789 | 821 | 851 | 879 | 906 |
|                     | 92  | 517                 | 519 | 542 | 581 | 608 | 631 | 653 | 674 | 693 | 712 | 729 | 745 | 761 | 775 | 789 | 802 | 834 | 864 | 892 | 919 |
|                     | 94  | 538                 | 542 | 568 | 611 | 640 | 663 | 685 | 706 | 725 | 744 | 761 | 777 | 793 | 807 | 821 | 834 | 846 | 876 | 904 | 931 |
|                     | 96  | 558                 | 564 | 593 | 640 | 670 | 693 | 715 | 736 | 755 | 774 | 791 | 807 | 823 | 837 | 851 | 864 | 876 | 887 | 916 | 943 |
|                     | 98  | 576                 | 584 | 616 | 667 | 699 | 722 | 744 | 764 | 784 | 802 | 820 | 836 | 851 | 866 | 879 | 892 | 904 | 916 | 927 | 953 |
|                     | 100 | 594                 | 604 | 638 | 692 | 725 | 749 | 771 | 791 | 811 | 829 | 846 | 863 | 878 | 893 | 906 | 919 | 931 | 943 | 953 | 964 |

Note: Values are in \$1000's

**Figure A8: Couple's NPV for case 70-66 @ 3% interest**

| Spouse Age At Death | Earner Age At Death |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | 61                  | 62  | 64  | 66  | 68  | 70  | 72  | 74  | 76  | 78  | 80  | 82  | 84  | 86  | 88  | 90  | 92  | 94  | 96  | 98  |
| 62                  | 33                  | 74  | 111 | 143 | 172 | 198 | 221 | 241 | 260 | 276 | 290 | 303 | 315 | 325 | 334 | 342 | 349 | 355 | 361 | 366 |
| 64                  | 78                  | 93  | 130 | 162 | 191 | 217 | 240 | 261 | 279 | 295 | 309 | 322 | 334 | 344 | 353 | 361 | 368 | 374 | 380 | 385 |
| 66                  | 118                 | 134 | 147 | 180 | 209 | 234 | 257 | 278 | 296 | 312 | 327 | 339 | 351 | 361 | 370 | 378 | 385 | 392 | 397 | 402 |
| 68                  | 154                 | 169 | 183 | 195 | 224 | 250 | 273 | 293 | 311 | 327 | 342 | 355 | 366 | 376 | 385 | 393 | 400 | 407 | 412 | 418 |
| 70                  | 186                 | 201 | 215 | 227 | 237 | 263 | 286 | 306 | 325 | 341 | 355 | 368 | 380 | 390 | 399 | 407 | 414 | 420 | 426 | 431 |
| 72                  | 215                 | 230 | 243 | 255 | 266 | 275 | 298 | 319 | 337 | 353 | 367 | 380 | 392 | 402 | 411 | 419 | 426 | 432 | 438 | 443 |
| 74                  | 240                 | 255 | 268 | 280 | 291 | 300 | 309 | 329 | 347 | 364 | 378 | 391 | 402 | 412 | 422 | 430 | 437 | 443 | 449 | 454 |
| 76                  | 262                 | 277 | 291 | 303 | 313 | 323 | 331 | 339 | 357 | 373 | 388 | 400 | 412 | 422 | 431 | 439 | 446 | 453 | 458 | 463 |
| 78                  | 282                 | 297 | 311 | 323 | 333 | 343 | 351 | 359 | 365 | 382 | 396 | 409 | 420 | 430 | 440 | 448 | 455 | 461 | 467 | 472 |
| 80                  | 300                 | 315 | 329 | 341 | 351 | 361 | 369 | 377 | 383 | 389 | 404 | 416 | 428 | 438 | 447 | 455 | 462 | 469 | 474 | 479 |
| 82                  | 316                 | 331 | 345 | 356 | 367 | 377 | 385 | 392 | 399 | 405 | 410 | 423 | 435 | 445 | 454 | 462 | 469 | 475 | 481 | 486 |
| 84                  | 330                 | 345 | 359 | 371 | 381 | 391 | 399 | 407 | 413 | 419 | 424 | 429 | 441 | 451 | 460 | 468 | 475 | 481 | 487 | 492 |
| 86                  | 343                 | 358 | 371 | 383 | 394 | 403 | 412 | 419 | 426 | 432 | 437 | 442 | 446 | 456 | 465 | 473 | 480 | 487 | 492 | 497 |
| 88                  | 354                 | 369 | 382 | 394 | 405 | 414 | 423 | 430 | 437 | 443 | 448 | 453 | 457 | 461 | 470 | 478 | 485 | 491 | 497 | 502 |
| 90                  | 364                 | 379 | 392 | 404 | 415 | 424 | 433 | 440 | 447 | 453 | 458 | 463 | 467 | 471 | 474 | 482 | 489 | 496 | 501 | 506 |
| 92                  | 373                 | 388 | 401 | 413 | 424 | 433 | 442 | 449 | 456 | 462 | 467 | 472 | 476 | 480 | 483 | 486 | 493 | 499 | 505 | 510 |
| 94                  | 381                 | 396 | 409 | 421 | 432 | 441 | 450 | 457 | 464 | 470 | 475 | 480 | 484 | 488 | 491 | 494 | 496 | 503 | 508 | 513 |
| 96                  | 388                 | 403 | 416 | 428 | 439 | 448 | 457 | 464 | 471 | 477 | 482 | 487 | 491 | 495 | 498 | 501 | 503 | 506 | 511 | 516 |
| 98                  | 394                 | 409 | 422 | 434 | 445 | 454 | 463 | 470 | 477 | 483 | 488 | 493 | 497 | 501 | 504 | 507 | 510 | 512 | 514 | 519 |
| 100                 | 399                 | 414 | 428 | 440 | 450 | 460 | 468 | 476 | 482 | 488 | 494 | 498 | 503 | 506 | 510 | 513 | 515 | 518 | 520 | 521 |

Note: Values are in \$1000's

**Figure A9: Couple's NPV for case 62-62 @ 6% interest**

| Spouse Age At Death | Earner Age At Death |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | 61                  | 62  | 64  | 66  | 68  | 70  | 72  | 74  | 76  | 78  | 80  | 82  | 84  | 86  | 88  | 90  | 92  | 94  | 96  | 98  | 100 |
| 62                  | 62                  | 22  | 64  | 100 | 133 | 162 | 188 | 211 | 231 | 249 | 265 | 280 | 293 | 304 | 314 | 323 | 331 | 338 | 345 | 351 | 356 |
| 64                  | 64                  | 68  | 64  | 100 | 133 | 162 | 188 | 211 | 231 | 249 | 265 | 280 | 293 | 304 | 314 | 323 | 331 | 338 | 345 | 351 | 356 |
| 66                  | 66                  | 108 | 104 | 112 | 145 | 174 | 199 | 222 | 243 | 261 | 277 | 292 | 304 | 316 | 326 | 335 | 343 | 350 | 357 | 362 | 367 |
| 68                  | 68                  | 144 | 140 | 148 | 166 | 195 | 221 | 244 | 265 | 283 | 299 | 313 | 326 | 338 | 348 | 357 | 365 | 372 | 378 | 384 | 389 |
| 70                  | 70                  | 176 | 172 | 180 | 198 | 215 | 240 | 263 | 284 | 302 | 318 | 333 | 346 | 357 | 367 | 376 | 384 | 391 | 398 | 403 | 408 |
| 72                  | 72                  | 204 | 200 | 208 | 227 | 243 | 258 | 281 | 301 | 319 | 336 | 350 | 363 | 374 | 384 | 393 | 401 | 409 | 415 | 421 | 426 |
| 74                  | 74                  | 229 | 225 | 233 | 252 | 268 | 283 | 296 | 316 | 335 | 351 | 365 | 378 | 389 | 400 | 409 | 417 | 424 | 430 | 436 | 441 |
| 76                  | 76                  | 252 | 248 | 256 | 274 | 291 | 305 | 318 | 330 | 348 | 364 | 379 | 392 | 403 | 413 | 422 | 430 | 438 | 444 | 450 | 455 |
| 78                  | 78                  | 272 | 268 | 276 | 294 | 311 | 325 | 338 | 350 | 360 | 377 | 391 | 404 | 415 | 425 | 434 | 442 | 450 | 456 | 462 | 467 |
| 80                  | 80                  | 290 | 286 | 294 | 312 | 329 | 343 | 356 | 368 | 378 | 387 | 402 | 415 | 426 | 436 | 445 | 453 | 460 | 467 | 472 | 478 |
| 82                  | 82                  | 306 | 301 | 310 | 328 | 345 | 359 | 372 | 384 | 394 | 403 | 411 | 424 | 436 | 446 | 455 | 463 | 470 | 476 | 482 | 487 |
| 84                  | 84                  | 320 | 316 | 324 | 342 | 359 | 373 | 386 | 398 | 408 | 417 | 426 | 433 | 444 | 454 | 463 | 471 | 479 | 485 | 491 | 496 |
| 86                  | 86                  | 332 | 328 | 336 | 355 | 371 | 386 | 399 | 410 | 421 | 430 | 438 | 445 | 452 | 462 | 471 | 479 | 486 | 493 | 498 | 503 |
| 88                  | 88                  | 343 | 339 | 347 | 366 | 382 | 397 | 410 | 422 | 432 | 441 | 449 | 457 | 463 | 469 | 478 | 486 | 493 | 499 | 505 | 510 |
| 90                  | 90                  | 353 | 349 | 357 | 376 | 392 | 407 | 420 | 432 | 442 | 451 | 459 | 466 | 473 | 479 | 484 | 492 | 499 | 505 | 511 | 516 |
| 92                  | 92                  | 362 | 358 | 366 | 385 | 401 | 416 | 429 | 440 | 451 | 460 | 468 | 475 | 482 | 488 | 493 | 497 | 504 | 511 | 516 | 521 |
| 94                  | 94                  | 370 | 366 | 374 | 393 | 409 | 424 | 437 | 448 | 459 | 468 | 476 | 483 | 490 | 495 | 501 | 505 | 509 | 516 | 521 | 526 |
| 96                  | 96                  | 377 | 373 | 381 | 400 | 416 | 431 | 444 | 455 | 466 | 475 | 483 | 490 | 497 | 502 | 508 | 512 | 516 | 520 | 525 | 530 |
| 98                  | 98                  | 383 | 379 | 387 | 406 | 422 | 437 | 450 | 462 | 472 | 481 | 489 | 496 | 503 | 509 | 514 | 518 | 522 | 526 | 529 | 534 |
| 100                 | 100                 | 389 | 385 | 393 | 411 | 428 | 442 | 455 | 467 | 477 | 487 | 495 | 502 | 508 | 514 | 519 | 524 | 528 | 532 | 535 | 538 |

Note: Values are in \$1000's

**Figure A10: Couple's NPV for case 62-66 @ 6% interest**

| Spouse Age At Death | Earner Age At Death |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | 61                  | 62  | 64  | 66  | 68  | 70  | 72  | 74  | 76  | 78  | 80  | 82  | 84  | 86  | 88  | 90  | 92  | 94  | 96  | 98  |
| 62                  | -                   | -   | 24  | 67  | 106 | 140 | 171 | 198 | 222 | 244 | 263 | 280 | 296 | 309 | 321 | 332 | 341 | 350 | 357 | 364 |
| 64                  | 44                  | -   | 24  | 67  | 106 | 140 | 171 | 198 | 222 | 244 | 263 | 280 | 296 | 309 | 321 | 332 | 341 | 350 | 357 | 364 |
| 66                  | 89                  | 46  | 36  | 79  | 118 | 152 | 183 | 210 | 234 | 256 | 275 | 292 | 307 | 321 | 333 | 344 | 353 | 362 | 369 | 376 |
| 68                  | 126                 | 88  | 79  | 101 | 139 | 174 | 204 | 232 | 256 | 278 | 297 | 314 | 329 | 343 | 355 | 365 | 375 | 383 | 391 | 398 |
| 70                  | 159                 | 125 | 118 | 139 | 159 | 193 | 224 | 251 | 275 | 297 | 316 | 333 | 348 | 362 | 374 | 385 | 394 | 403 | 410 | 417 |
| 72                  | 189                 | 157 | 152 | 174 | 193 | 210 | 241 | 268 | 292 | 314 | 333 | 350 | 366 | 379 | 391 | 402 | 412 | 420 | 428 | 434 |
| 74                  | 215                 | 187 | 183 | 204 | 224 | 241 | 256 | 284 | 308 | 329 | 349 | 366 | 381 | 394 | 407 | 417 | 427 | 435 | 443 | 450 |
| 76                  | 238                 | 213 | 210 | 232 | 251 | 268 | 284 | 297 | 321 | 343 | 362 | 379 | 395 | 408 | 420 | 431 | 440 | 449 | 457 | 463 |
| 78                  | 259                 | 236 | 234 | 256 | 275 | 292 | 308 | 321 | 334 | 355 | 374 | 391 | 407 | 420 | 432 | 443 | 453 | 461 | 469 | 475 |
| 80                  | 278                 | 256 | 256 | 278 | 297 | 314 | 329 | 343 | 355 | 366 | 385 | 402 | 417 | 431 | 443 | 454 | 463 | 472 | 479 | 486 |
| 82                  | 294                 | 275 | 275 | 297 | 316 | 333 | 349 | 362 | 374 | 385 | 395 | 412 | 427 | 441 | 453 | 463 | 473 | 481 | 489 | 496 |
| 84                  | 309                 | 291 | 292 | 314 | 333 | 350 | 366 | 379 | 391 | 402 | 412 | 420 | 436 | 449 | 461 | 472 | 482 | 490 | 498 | 504 |
| 86                  | 322                 | 305 | 307 | 329 | 348 | 366 | 381 | 395 | 407 | 417 | 427 | 436 | 443 | 457 | 469 | 480 | 489 | 498 | 505 | 512 |
| 88                  | 334                 | 318 | 321 | 343 | 362 | 379 | 394 | 408 | 420 | 431 | 441 | 449 | 457 | 464 | 476 | 486 | 496 | 504 | 512 | 519 |
| 90                  | 344                 | 330 | 333 | 355 | 374 | 391 | 407 | 420 | 432 | 443 | 453 | 461 | 469 | 476 | 482 | 492 | 502 | 510 | 518 | 525 |
| 92                  | 353                 | 340 | 344 | 365 | 385 | 402 | 417 | 431 | 443 | 454 | 463 | 472 | 480 | 486 | 492 | 498 | 507 | 516 | 523 | 530 |
| 94                  | 361                 | 349 | 353 | 375 | 394 | 412 | 427 | 440 | 453 | 463 | 473 | 482 | 489 | 496 | 502 | 507 | 512 | 521 | 528 | 535 |
| 96                  | 369                 | 357 | 362 | 383 | 403 | 420 | 435 | 449 | 461 | 472 | 481 | 490 | 498 | 504 | 510 | 516 | 521 | 525 | 532 | 539 |
| 98                  | 375                 | 364 | 369 | 391 | 410 | 428 | 443 | 457 | 469 | 479 | 489 | 498 | 505 | 512 | 518 | 523 | 528 | 532 | 536 | 543 |
| 100                 | 381                 | 371 | 376 | 398 | 417 | 434 | 450 | 463 | 475 | 486 | 496 | 504 | 512 | 519 | 525 | 530 | 535 | 539 | 543 | 546 |

Note: Values are in \$1000's

Note: Values are in \$1000's

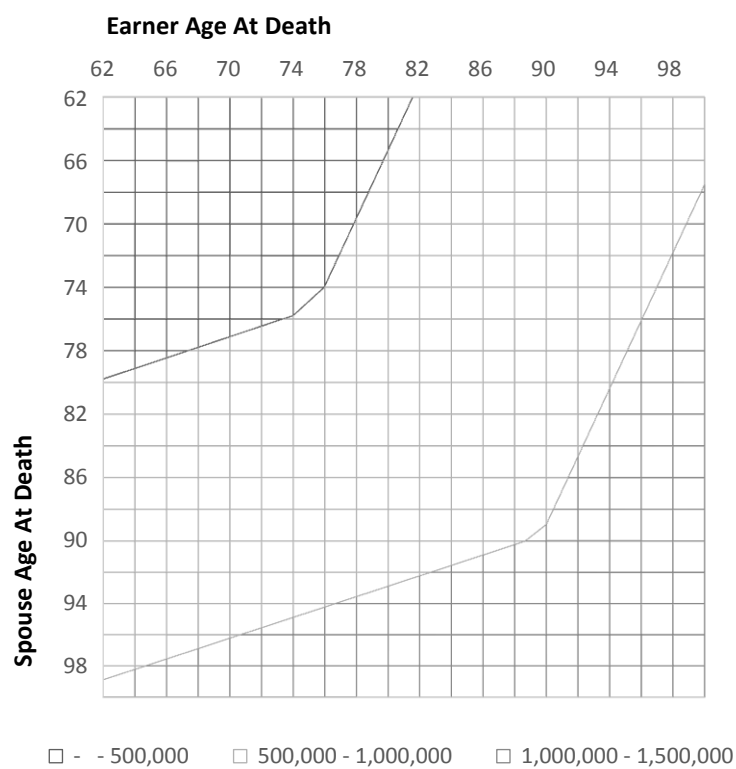
**Figure A11: Couple's NPV for case 66-66 @ 6% interest**

| Earner Age At Death          |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Spouse Age At Death          | 61  | 62  | 64  | 66  | 68  | 70  | 72  | 74  | 76  | 78  | 80  | 82  | 84  | 86  | 88  | 90  | 92  | 94  | 96  | 98  | 100 |
|                              | 62  | -   | -   | -   | -   | 25  | 70  | 111 | 147 | 179 | 207 | 233 | 255 | 275 | 293 | 309 | 323 | 336 | 347 | 357 | 366 |
|                              | 64  | 44  | -   | -   | -   | 25  | 70  | 111 | 147 | 179 | 207 | 233 | 255 | 275 | 293 | 309 | 323 | 336 | 347 | 357 | 366 |
|                              | 66  | 89  | 46  | 12  | 12  | 37  | 82  | 122 | 158 | 190 | 219 | 244 | 267 | 287 | 305 | 321 | 335 | 348 | 359 | 369 | 378 |
|                              | 68  | 126 | 88  | 59  | 34  | 58  | 104 | 144 | 180 | 212 | 241 | 266 | 289 | 309 | 327 | 343 | 357 | 369 | 381 | 391 | 399 |
|                              | 70  | 159 | 125 | 101 | 82  | 78  | 123 | 164 | 200 | 232 | 260 | 285 | 308 | 328 | 346 | 362 | 376 | 389 | 400 | 410 | 419 |
|                              | 72  | 189 | 157 | 138 | 124 | 123 | 140 | 181 | 217 | 249 | 277 | 303 | 325 | 345 | 363 | 379 | 393 | 406 | 417 | 427 | 436 |
|                              | 74  | 215 | 187 | 171 | 162 | 164 | 181 | 196 | 232 | 264 | 293 | 318 | 341 | 361 | 378 | 394 | 409 | 421 | 432 | 442 | 451 |
|                              | 76  | 238 | 213 | 200 | 196 | 200 | 217 | 232 | 246 | 278 | 306 | 332 | 354 | 374 | 392 | 408 | 422 | 435 | 446 | 456 | 465 |
|                              | 78  | 259 | 236 | 226 | 226 | 232 | 249 | 264 | 278 | 290 | 318 | 344 | 366 | 386 | 404 | 420 | 434 | 447 | 458 | 468 | 477 |
|                              | 80  | 278 | 256 | 250 | 253 | 260 | 277 | 293 | 306 | 318 | 329 | 354 | 377 | 397 | 415 | 431 | 445 | 458 | 469 | 479 | 488 |
|                              | 82  | 294 | 275 | 270 | 277 | 285 | 303 | 318 | 332 | 344 | 354 | 364 | 387 | 407 | 425 | 441 | 455 | 467 | 479 | 489 | 497 |
|                              | 84  | 309 | 291 | 289 | 298 | 308 | 325 | 341 | 354 | 366 | 377 | 387 | 395 | 415 | 433 | 449 | 463 | 476 | 487 | 497 | 506 |
|                              | 86  | 322 | 305 | 305 | 317 | 328 | 345 | 361 | 374 | 386 | 397 | 407 | 415 | 423 | 441 | 457 | 471 | 483 | 495 | 505 | 514 |
|                              | 88  | 334 | 318 | 320 | 334 | 346 | 363 | 378 | 392 | 404 | 415 | 425 | 433 | 441 | 448 | 463 | 478 | 490 | 501 | 511 | 520 |
|                              | 90  | 344 | 330 | 333 | 348 | 362 | 379 | 394 | 408 | 420 | 431 | 441 | 449 | 457 | 463 | 470 | 484 | 496 | 508 | 517 | 526 |
|                              | 92  | 353 | 340 | 345 | 362 | 376 | 393 | 409 | 422 | 434 | 445 | 455 | 463 | 471 | 478 | 484 | 489 | 502 | 513 | 523 | 532 |
|                              | 94  | 361 | 349 | 355 | 374 | 389 | 406 | 421 | 435 | 447 | 458 | 467 | 476 | 483 | 490 | 496 | 502 | 506 | 518 | 528 | 537 |
|                              | 96  | 369 | 357 | 364 | 384 | 400 | 417 | 432 | 446 | 458 | 469 | 479 | 487 | 495 | 501 | 508 | 513 | 518 | 522 | 532 | 541 |
|                              | 98  | 375 | 364 | 372 | 394 | 410 | 427 | 442 | 456 | 468 | 479 | 489 | 497 | 505 | 511 | 517 | 523 | 528 | 532 | 536 | 545 |
|                              | 100 | 381 | 371 | 380 | 402 | 419 | 436 | 451 | 465 | 477 | 488 | 497 | 506 | 514 | 520 | 526 | 532 | 537 | 541 | 545 | 548 |
| Note: Values are in \$1000's |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

Note: Values are in \$1000's

**Figure A12: Couple's NPV for case 70-66 @ 6% interest**

## Appendix B      Graphs of Couple's Total NPV

**NPV of Couple's Total Benefits @ 0% (62-62)**



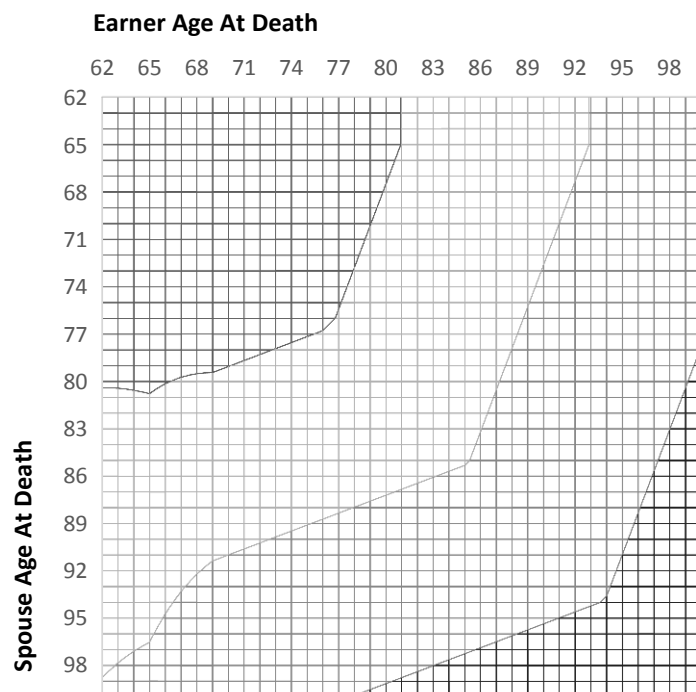
## NPV of Couple's Total Income @ 0% (62-66)



## NPV of Couple's Total Benefits @ 0% (66-66)



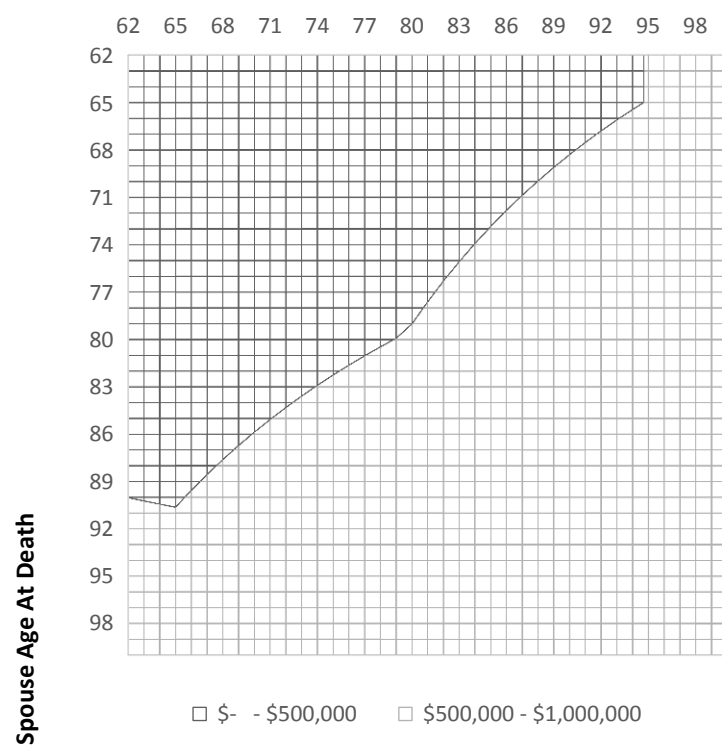
## NPV of Couple's Total Benefits @ 0% (70-66)



☐ \$- - \$500,000    ☐ \$500,000 - \$1,000,000    ☐ \$1,000,000 - \$1,500,000    ☐ \$1,500,000 - \$2,000,000

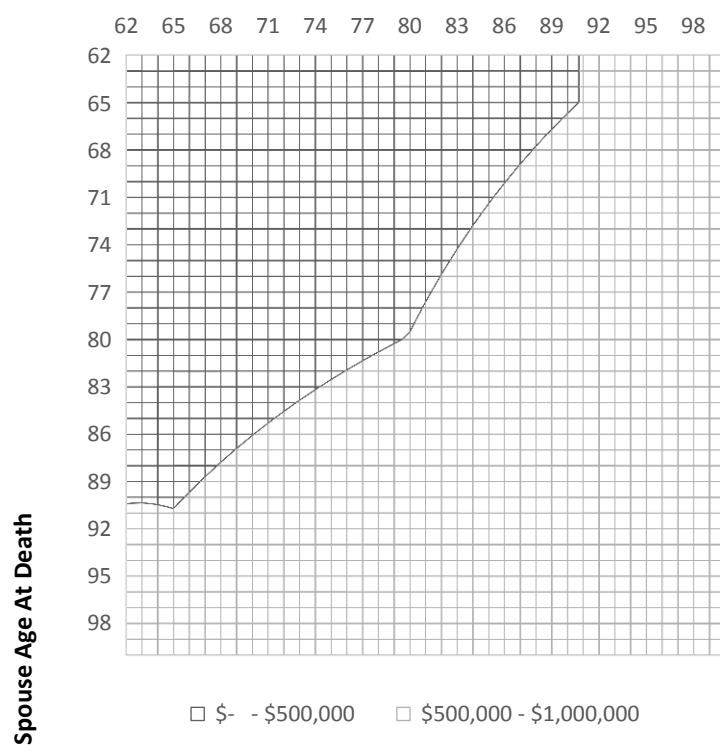
## NPV of Couple's Total Benefits @ 3% (62-66)

Earners Age At Death



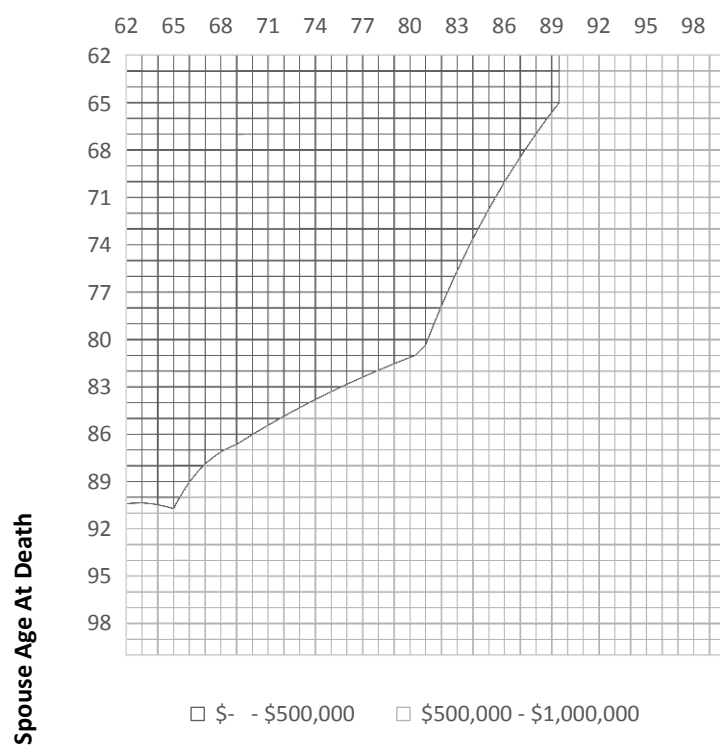
## NPV of Couple's Total Benefits @ 3% (66-66)

Earners Age At Death



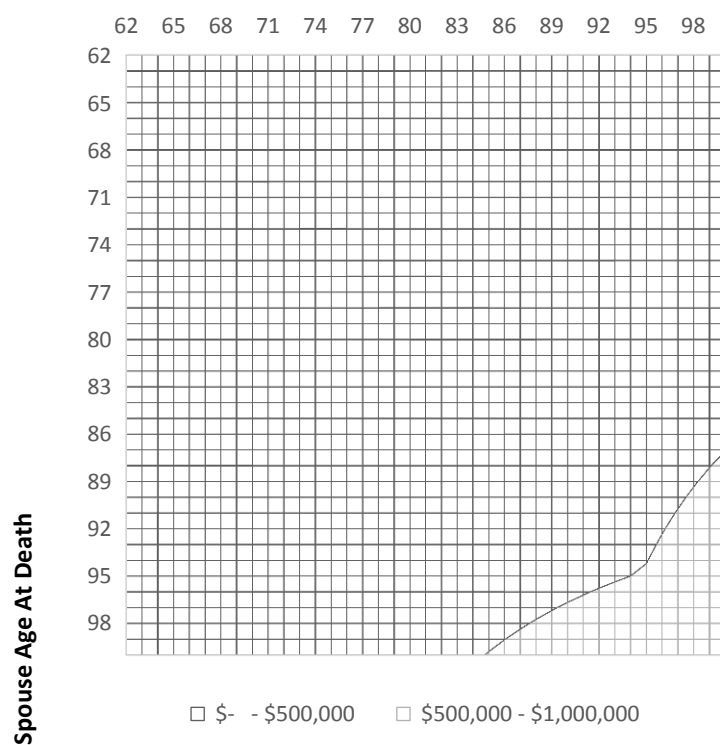
## NPV of Couple's Total Benefits @ 3% (70-66)

Earners Age At Death



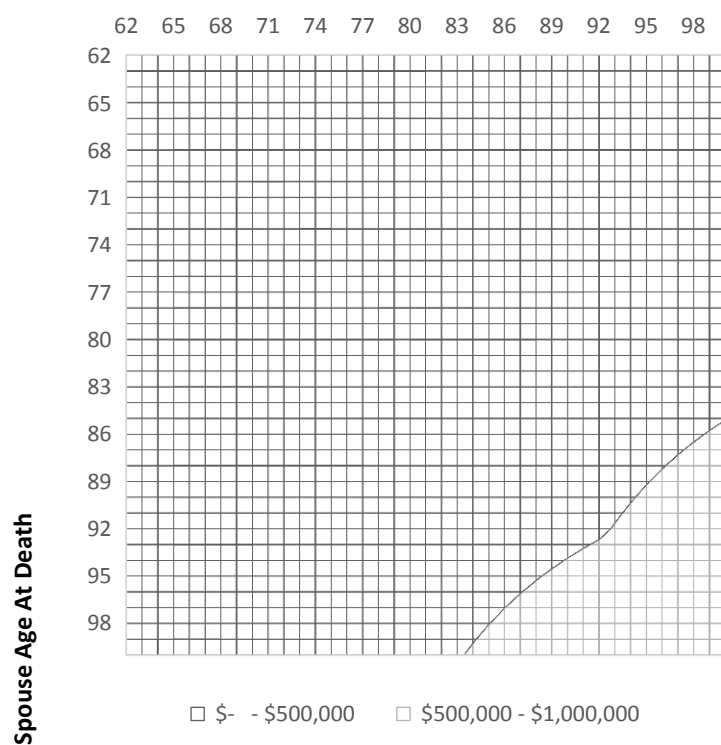
## NPV of Couple's Total Benefits @ 6% (62-62)

Earners Age At Death



## NPV of Couple's Total Benefits @ 6% (62-66)

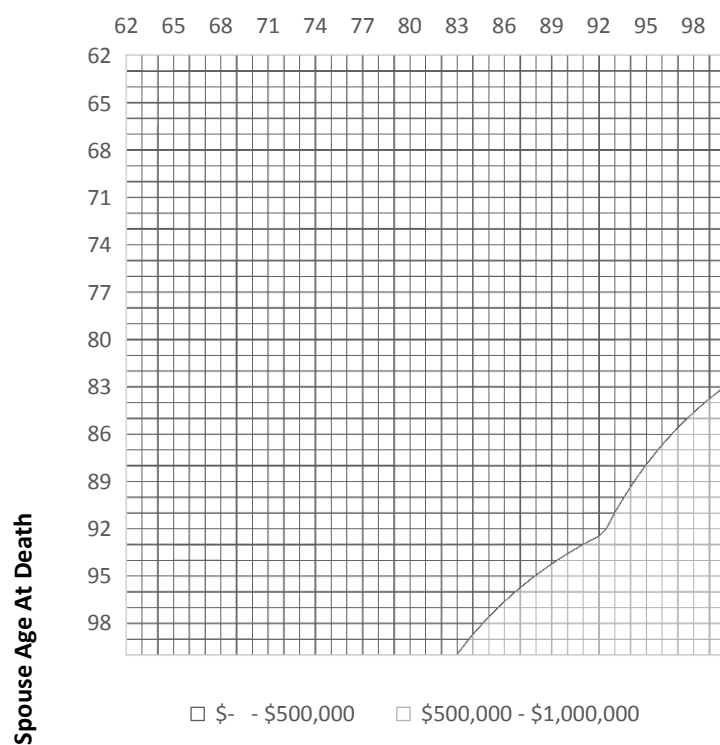
Earners Age At Death





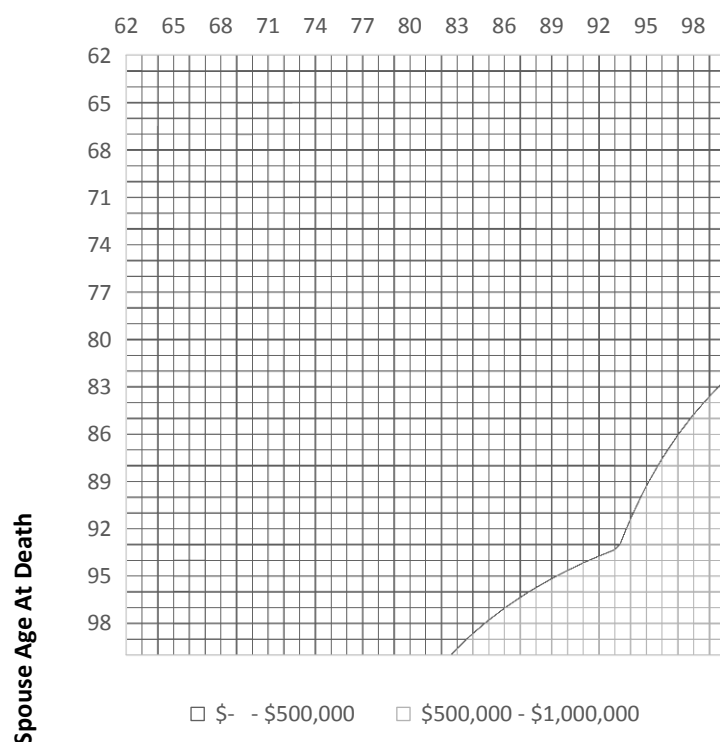
## NPV of Couple's Total Benefits @ 6% (66-66)

Earners Age At Death



## NPV of Couple's Total Benefits @ 6% (70-66)

Earners Age At Death



## Appendix C The Couple's Advantage Matrices

| Earner Age At Death     |       |       |       |       |       |       |       |       |       |       |       |     |     |     |     |     |     |     |     |     |     |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                         | 61    | 62    | 64    | 66    | 68    | 70    | 72    | 74    | 76    | 78    | 80    | 82  | 84  | 86  | 88  | 90  | 92  | 94  | 96  | 98  | 100 |
| Spouse Age At Death     | 62    | 11    | 11    | 11    | 11    | 11    | 11    | 11    | 11    | 3     | 0     | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
|                         | 64    | 63    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 25    | 10    | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 0   |
|                         | 66    | 116   | 86    | 55    | 55    | 55    | 55    | 55    | 55    | 48    | 32    | 16  | 16  | 16  | 16  | 16  | 16  | 16  | 16  | 16  | 16  |
|                         | 68    | 168   | 138   | 108   | 78    | 78    | 78    | 78    | 78    | 70    | 54    | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  |
|                         | 70    | 220   | 190   | 160   | 130   | 100   | 100   | 100   | 100   | 92    | 79    | 79  | 79  | 79  | 79  | 79  | 79  | 79  | 79  | 79  | 79  |
|                         | 72    | 273   | 243   | 212   | 182   | 152   | 122   | 122   | 122   | 114   | 111   | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 | 111 |
|                         | 74    | 325   | 295   | 265   | 235   | 205   | 174   | 144   | 144   | 143   | 143   | 143 | 143 | 143 | 143 | 143 | 143 | 143 | 143 | 143 | 143 |
|                         | 76    | 377   | 347   | 317   | 287   | 257   | 227   | 197   | 174   | 174   | 174   | 174 | 174 | 174 | 174 | 174 | 174 | 174 | 174 | 174 | 174 |
|                         | 78    | 430   | 400   | 369   | 339   | 309   | 279   | 249   | 230   | 206   | 206   | 206 | 206 | 206 | 206 | 206 | 206 | 206 | 206 | 206 | 206 |
|                         | 80    | 482   | 452   | 422   | 392   | 362   | 331   | 309   | 293   | 270   | 238   | 238 | 238 | 238 | 238 | 238 | 238 | 238 | 238 | 238 | 238 |
|                         | 82    | 534   | 504   | 474   | 444   | 414   | 394   | 378   | 362   | 338   | 306   | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 | 270 |
|                         | 84    | 587   | 557   | 526   | 510   | 493   | 477   | 461   | 446   | 422   | 390   | 353 | 301 | 301 | 301 | 301 | 301 | 301 | 301 | 301 | 301 |
|                         | 86    | 639   | 609   | 582   | 589   | 577   | 561   | 545   | 529   | 505   | 474   | 437 | 385 | 333 | 333 | 333 | 333 | 333 | 333 | 333 | 333 |
|                         | 88    | 691   | 661   | 650   | 668   | 661   | 645   | 629   | 613   | 589   | 558   | 521 | 469 | 417 | 365 | 365 | 365 | 365 | 365 | 365 | 365 |
|                         | 90    | 744   | 714   | 719   | 746   | 744   | 728   | 713   | 697   | 673   | 641   | 604 | 552 | 500 | 448 | 396 | 396 | 396 | 396 | 396 | 396 |
|                         | 92    | 796   | 774   | 787   | 825   | 828   | 812   | 796   | 780   | 757   | 725   | 688 | 636 | 584 | 532 | 480 | 428 | 428 | 428 | 428 | 428 |
|                         | 94    | 848   | 835   | 856   | 903   | 912   | 896   | 880   | 864   | 840   | 809   | 772 | 720 | 668 | 616 | 564 | 512 | 460 | 460 | 460 | 460 |
|                         | 96    | 901   | 895   | 924   | 982   | 995   | 980   | 964   | 948   | 924   | 892   | 856 | 804 | 752 | 700 | 648 | 596 | 544 | 492 | 492 | 492 |
|                         | 98    | 955   | 956   | 993   | 1,061 | 1,079 | 1,063 | 1,047 | 1,032 | 1,008 | 976   | 939 | 887 | 835 | 783 | 731 | 679 | 627 | 575 | 523 | 523 |
| 100                     | 1,010 | 1,016 | 1,061 | 1,139 | 1,163 | 1,147 | 1,131 | 1,115 | 1,092 | 1,060 | 1,023 | 971 | 919 | 867 | 815 | 763 | 711 | 659 | 607 | 555 |     |
| Key: Couple's Advantage |       |       |       |       |       |       |       |       |       |       |       |     |     |     |     |     |     |     |     |     |     |

Key: Couple's Advantage

**Figure C1: The couple's annual advantage (in age 62 dollars) over a single earner at 0% interest**

|                     |     | Earner Age At Death |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|-----|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Spouse Age At Death | 61  | 62                  | 64  | 66  | 68  | 70  | 72  | 74  | 76  | 78  | 80  | 82  | 84  | 86  | 88  | 90  | 92  | 94  | 96  | 98  | 100 |
|                     | 62  | 10                  | 10  | 10  | 10  | 10  | 10  | 10  | 10  | 10  | 10  | 10  | 10  | 10  | 10  | 10  | 10  | 8   | 5   | 4   | 0*  |
|                     | 64  | 56                  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 30  | 29  | 27  | 25  | 23  | 19  |
|                     | 66  | 96                  | 70  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 46  | 44  | 42  | 40  | 36  |
|                     | 68  | 132                 | 106 | 83  | 62  | 62  | 62  | 62  | 62  | 62  | 62  | 62  | 62  | 62  | 62  | 62  | 61  | 59  | 57  | 55  | 52  |
|                     | 70  | 164                 | 138 | 114 | 94  | 75  | 75  | 75  | 75  | 75  | 75  | 75  | 75  | 75  | 75  | 75  | 75  | 73  | 70  | 69  | 65  |
|                     | 72  | 192                 | 166 | 143 | 122 | 104 | 88  | 88  | 88  | 88  | 88  | 88  | 88  | 88  | 88  | 88  | 87  | 85  | 82  | 81  | 77  |
|                     | 74  | 217                 | 191 | 168 | 148 | 129 | 113 | 98  | 98  | 98  | 98  | 98  | 98  | 98  | 98  | 98  | 98  | 95  | 93  | 91  | 88  |
|                     | 76  | 240                 | 214 | 191 | 170 | 152 | 135 | 121 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 108 | 107 | 105 | 103 | 101 | 99  |
|                     | 78  | 260                 | 234 | 211 | 190 | 172 | 155 | 141 | 128 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 116 | 113 | 111 | 111 | 111 |
|                     | 80  | 278                 | 252 | 228 | 208 | 189 | 173 | 159 | 146 | 134 | 124 | 124 | 124 | 124 | 124 | 124 | 123 | 122 | 122 | 122 | 122 |
|                     | 82  | 294                 | 268 | 244 | 224 | 205 | 189 | 174 | 161 | 150 | 140 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 132 |
|                     | 84  | 308                 | 282 | 258 | 238 | 219 | 203 | 189 | 176 | 164 | 154 | 146 | 140 | 140 | 140 | 140 | 140 | 140 | 140 | 140 | 140 |
|                     | 86  | 320                 | 294 | 271 | 250 | 232 | 216 | 201 | 188 | 177 | 166 | 158 | 153 | 148 | 148 | 148 | 148 | 148 | 148 | 148 | 148 |
|                     | 88  | 331                 | 305 | 282 | 262 | 243 | 227 | 212 | 199 | 188 | 178 | 169 | 164 | 159 | 155 | 155 | 155 | 155 | 155 | 155 | 155 |
|                     | 90  | 341                 | 315 | 292 | 271 | 253 | 237 | 222 | 209 | 198 | 187 | 179 | 174 | 169 | 164 | 161 | 161 | 161 | 161 | 161 | 161 |
|                     | 92  | 350                 | 324 | 301 | 280 | 262 | 246 | 231 | 218 | 207 | 196 | 188 | 183 | 178 | 173 | 169 | 166 | 166 | 166 | 166 | 166 |
|                     | 94  | 358                 | 332 | 309 | 288 | 270 | 253 | 239 | 226 | 214 | 204 | 196 | 191 | 186 | 182 | 179 | 175 | 171 | 171 | 171 | 171 |
|                     | 96  | 365                 | 339 | 316 | 295 | 277 | 261 | 246 | 233 | 221 | 211 | 203 | 198 | 194 | 190 | 187 | 184 | 179 | 175 | 175 | 175 |
|                     | 98  | 371                 | 345 | 322 | 301 | 283 | 267 | 252 | 239 | 228 | 217 | 209 | 205 | 201 | 198 | 195 | 192 | 187 | 183 | 179 | 179 |
|                     | 100 | 377                 | 351 | 328 | 307 | 289 | 272 | 258 | 245 | 233 | 223 | 218 | 213 | 210 | 206 | 203 | 200 | 195 | 191 | 187 | 182 |

Key: Couple's Advantage

Note: Values are in \$1000's

\*\* This value is a couple's advantage of \$196

Key: Couple's Advantage

Note: Values are in \$1000's

\*\* This value is a couple's advantage of \$196

**Figure C2: The couple's annual advantage (in age 62 dollars) over a single earner at 6% interest**